ABSTRACT

FROM THE

RETURNS OF AGRICULTURAL SOCIETIES.

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RETURNS OF AGRICULTURAL SOCIETIES

IN MASSACHUSETTS,

FOR THE YEAR 1845,

WITH SELECTIONS FROM ADDRESSES

AT CATTLE SHOWS AND FAIRS.

BY JOHN G. PALFREY,

SECRETARY OF THE COMMONWEALTH.

Boston:
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APPENDIX.

ADVERTISEMENT.

THE Massachusetts Society for promoting Agriculture, the first association of the kind in the Commonwealth or in America, was founded in the year 1792, and incorporated by an Act of the General Court of that year.

Obtaining means of operation by an annual assessment upon its members, and by a subscription amounting to four thousand dollars, a liberal sum for that period, it proceeded to invite public attention to its objects, to distribute premiums for agricultural improvements, and to import valuable animals with a view to the introduction of better breeds of cattle and other stock. In 1797, it instituted the Agricultural Journal, a publication continued more than thirty years. It took measures for the institution of County Societies, and for the erection of a hall, at Brighton, in Middlesex, for the exhibition of domestic and other manufactures. It contributed to the establishment of the Professorship of Natural History, and of the Botanical Garden, in the University of Cambridge. In 1818, began a series of public addresses, pronounced successively at its autumnal celebrations, by John Lowell, Josiah Quincy, Richard Sullivan, Henry Colman, Timothy Pickering, John C. Gray, James Richardson, Edward Everett, Henry A. S. Dearborn, and perhaps others. The delivery and publication of addresses from such sources exerted an important influence in attracting attention and favor to the objects of the association.

The example was followed by other institutions for the same purpose. The Commonwealth extended to them its patronage; and the policy has been continued, and has grown in favor, to the present time. An Act of 1819 (chapter 114) appropriated two hundred dollars annually, from the Commonwealth's treasury, to every Society which should raise the sum of one thousand dollars for the promotion of agriculture, and in like proportion for any greater sum, not exceeding three thousand dollars. The following Table exhibits a list of the Agricultural Societies now in existence, with the dates of their incorporation respectively, the dates of their first grant of money, and the aggregate amounts received from the Commonwealth.

	Date of Incorporation.	Date of 1st Payment.	Total amount received.
Massachusetts Society for promoting Agriculture,	March 7, 1792	Oct. 29, 1817	$18,300 00
Western Soc. of Middlesex Husbandmen. Name changed to Society of Middlesex Husbandmen and Manufacturers,	Feb. 28, 1803 / Jan. 24, 1820	Jan. 12, 1820	14,340 80
Berkshire Agricultural Society,*	Feb. 25, 1811	Oct. 29, 1817	13,736 60
Hampshire, Franklin and Hampden Agricultural Societies,	Feb. 19, 1818	Oct. 13, 1819	16 200 00
Worcester Agricultural Society,	Feb. 23, 1818	Jan. 12, 1820	16,200 00
Essex Agricultural Society,	June 12, 1818	Jan. 12, 1820	15,140 40
Agricultural Society in the County of Plymouth,	June 11, 1819	Oct. 27, 1820	12,884 49
Bristol County Agricultural Society,	June 14, 1823	Nov. 9, 1824	7,346 32
Agricultural Society of the County of Hampden,	March 5, 1844	Nov. 21, 1844	1,200 00
Barnstable County Agricultural Society,	March 15, 1344	Feb. 11, 1845	468 00
			$115,816 61

The following Societies have also been incorporated at the dates annexed, but are not known to have gone into operation; viz. —

Farmers' Association,	February 13, 1821
Hampshire Agricultural Society,	June 11, 1814
Suffolk Agricultural Society,	April 10, 1839

In 1837, Resolves (chap. 67) were passed of the following tenor; viz.

"*Resolved*, That His Excellency the Governor, by and with the advice of the Council, is hereby authorized and requested to appoint some suitable and competent person, whose duty it shall be, under the direction of His Excellency the Governor, to make an Agricultural Survey of the Commonwealth, collect accurate information of the state and condition of its agriculture, and every subject connected with it, point out the means of improvement, and make a detailed report thereof, with as much exactness as circumstances will admit.

"*Resolved*, That a summary of such survey and examination shall be furnished to His Excellency the Governor every six months, until the whole shall be completed, and at such other times as shall be required, to be published in such way and manner as he, with the advice of the Council, shall deem to be expedient and useful; and he is authorized to draw his warrants, from time to time, upon the treasurer, for such sums as may be necessary to defray the expenses of said survey, and to enable the person, so appointed, to proceed in

* The Cattle Show and Fair of this Society, at Pittsfield, in 1814, was the first held in this country.

the execution of the duties that shall be required of him; and to pay the same to him, not exceeding the sum of two thousand five hundred dollars per annum."

Mr. Henry Colman, the Agricultural Surveyor appointed under this authority, published four Reports, which had a wide circulation in the country, and attracted favorable attention abroad. The Resolves were repealed, and the office discontinued, by a Resolve of 1841 (chap. 14).

The laws now in force, relating to the subject, are the following; viz.

[Revised Statutes, Chap. 42.]

OF AGRICULTURAL CORPORATIONS.

SECTION 1. Every incorporated agricultural society, which shall have raised or may hereafter raise, by contribution of individuals, and put out at interest, on public or private security, the sum of one thousand dollars, as a capital stock appropriated for the uses of such society, shall be entitled to receive, in the month of October, annually, out of the treasury of the Commonwealth, the sum of two hundred dollars, and in that proportion annually for any greater sum so contributed and put at interest, as a capital stock; *provided*, that no agricultural society shall receive from the treasury more than six hundred dollars in any one year.

SECT. 2. Any agricultural society, formed within any county or counties, wherein there is no incorporated society for the same purpose, and which shall raise and put out at interest, as a capital stock, not less than one thousand dollars, for the uses of such society, shall receive, on application to the Legislature, an act of incorporation, in the usual form, and with the customary rights and powers; and, after such incorporation, the society shall have all the privileges, secured to other agricultural societies, on complying with the terms and provisions herein contained: *provided*, that no agricultural society shall have the benefits of this section, unless the same be formed in a county, or in an association of counties, including a population of not less than twenty-five thousand inhabitants.

SECT. 3. Every agricultural society, which shall claim the said allowance out of the public treasury, shall, in the month of October, annually, file in the office of the Secretary of State a certificate signed by the president and treasurer of such society, specifying under oath the sum actually contributed, and put at interest, and then held by them well secured as a capital stock; and a warrant shall be drawn for the sum to which such society may be entitled.

SECT. 4. Every agricultural society, which shall receive the said allowance from the public treasury, shall offer annually, by way of premiums, or shall apply otherwise, at their discretion, for the encouragement or improvement of agriculture or manufactures, a sum not less than the amount annually received, as aforesaid, out of the public treasury; and they shall also transmit to the office of the Secretary, in the month of January, annually, a statement of their proceedings in relation to the expenditure of such moneys, specifying the nature of the encouragement proposed by the society, and the objects for which their premiums have been offered, and to whom they were awarded; and shall accompany the same with such general observations, concerning the state of agriculture and manufactures, in the State, as they may deem important or useful.

SECT. 5. All moneys offered for premiums, which shall not be awarded or paid, shall be put out at interest, and added to the capital stock of each agricultural society.

SECT. 6. Every agricultural society, which shall receive the said public allowance, shall offer, annually, such premiums and encouragement, for the raising and preserving of oaks, and other forest trees, as to them shall seem proper, and best adapted to perpetuate, within the State, an adequate supply of ship timber.

SECT. 7. The foregoing provisions shall not extend to any agricultural society, which has been, or hereafter may be, incorporated for any territory less than a county.

SECT. 8. All incorporated agricultural societies may, by their officers, define and fix bounds of sufficient extent, for the erection of their cattle pens and yards, and for convenient passage ways to and about the same, on the days of their cattle shows and exhibitions, and also for their ploughing matches, and trials of working oxen; within which bounds, no person shall be permitted to enter or pass, unless in conformity with the regulations of the officers of said societies, respectively.

SECT. 9. If any person shall, contrary to the regulations of the said officers, and after notice thereof, enter or pass within the bounds so fixed, he shall forfeit a sum not exceeding five dollars, to be recovered in an action on the case, for the use of the society, by the treasurer thereof.

SECT. 10. The foregoing provisions shall not authorize such societies to occupy, or include, within the bounds which they shall fix for the purposes aforesaid, the land of any person, without his consent, nor to occupy any turnpike or public highway, in such a manner as to obstruct the public travel.

SECT. 11. The officers of every such society may appoint a sufficient number of suitable persons, inhabitants of the county, to act as marshals, at cattle shows and exhibitions, and they shall have and exercise all the powers of constables, in relation to the preservation of the public peace, and the service and execution of criminal process, within the towns, respectively, where such shows and exhibitions may be held; and any such criminal process may be directed to them accordingly; and they shall exercise their said office, from twelve o'clock at noon of the day preceding the commencement of such shows and exhibitions, until twelve o'clock at noon of the day succeeding the termination thereof, and no longer.

[Act of Feb. 25, 1842, Chap. 31.]

AN ACT RELATING TO RETURNS FROM AGRICULTURAL SOCIETIES.

SECT. 1. No agricultural society which, on the first day of April, in the year one thousand eight hundred and forty-two, shall have neglected to make returns to the Secretary of the Commonwealth, as required by the first and fourth sections of the forty-second chapter of the Revised Statutes, shall be entitled to receive the allowance from the Commonwealth, as therein provided.

SECT. 2. No agricultural society, which shall not have made returns to the office of the Secretary of the Commonwealth within the month of January, in the year one thousand eight hundred and forty-three, and within the month of January in each succeeding year thereafter, as required by the sections of the Revised Statutes mentioned in the preceding section, shall be entitled to receive any aid from the Commonwealth.

[Act of March 7, 1845, Chap. 111.]

AN ACT REQUIRING ADDITIONAL RETURNS FROM AGRICULTURAL SOCIETIES.

SECT. 1.* Every agricultural society entitled to receive money from the Treasury of the Commonwealth, shall, in addition to the return of premiums paid, now required to be made in the month of January, make full returns of their doings into the office of the Secretary of

* It has been made a question whether this section provides for an *additional return*, into the Secretary's office, to that required in the fourth section of chapter 42 of the Revised Statutes, or whether the incorporation, into the old form of return, of the information specified in the new, is a sufficient compliance with the law. The former appears to be the correct interpretation of the recent statute. The return under the old law must be made in the month of January, and may be made on any day of that month. The return under the new law may be made at any time before January, but cannot be made later than the first day of that month.

State, on or before the first day of January, in every year, embracing all reports of committees, and all statements of experiments and cultivation, deemed, by the officers of the several societies, worthy of publication.

SECT. 2. The secretary of each society, whether his return be in printed or manuscript form, shall mark, in a manner to be easily distinguished, those passages in the several reports and statements which he regards as most worthy of public notice, study and application.

SECT. 3. The Secretary of State is directed to transmit a copy of this act to the secretary of every incorporated agricultural society in the Commonwealth, on or before the first day of September, 1845.

SECT. 4. The Secretary of State is hereby directed to cause as full an abstract from said returns to be made and published in each year, for distribution, as in his judgment will prove useful.

SECT. 5. Any agricultural society which shall neglect, in any year, to comply with the provisions of this act, shall forfeit its claim to bounty from the Commonwealth the succeeding year.

SECT. 6. Any parts of passed acts inconsistent with the provisions of this, are hereby repealed.

The present publication is the first which has taken place under the authority of the Act of 1845. The Societies have all complied with its provisions so far as to furnish a summary of their proceedings for the year; but more than half of them have neglected that part of the law which requires them to mark those passages deemed by their secretaries worthy of public notice, study and application. All the returns were made within the legal time, with the exception of that of the society in Bristol.

Of these returns, the most complete is that of the Essex Agricultural Society, which, from its long experience in publishing annually a volume of its transactions, has attained to a high rank in the fulness of its reports and the exactness of its statements. The Worcester and the Plymouth Societies' returns are also highly satisfactory. The Hampden Society, considering its youth, (it having been established but two years), has made a very creditable return of its doings. The officers of all the societies have appeared desirous of furthering the design of the Legislature in enacting the law of last year, by making as full a return as the character of their proceedings admits.

The object of the law obviously is, to bring together the practical knowledge of our best farmers, horticulturists and manufacturers, in their respective branches of labor. In order to secure a valuable volume of this description, the Legislature of New York, in a law similar to our own on this subject, requires of all agricultural societies receiving the bounty of the State, that "before any premium shall be delivered, the person claiming the same, or to whom the same may be awarded, shall deliver in writing, to their respective officers, as accurate a description of the process in preparing the soils, including the quantity and quality of the manure applied, and in raising the crop or feeding the animal, as may be; and also of the expense and product of the crop, or of the increase in value of the animals, with the view of showing accurately the profit of cultivating the crop or feeding or fattening the animal." Our

statute establishing agricultural societies, and granting to them pecuniary aid, makes no provision for the collecting of information on these points. Perhaps it was thought that the trustees of these societies would secure the accomplishment of the object, so far as it might be deemed desirable, by regulations of their own. And we find, in fact, that several of the societies, at least, do require accurate statements of this description from claimants of their premiums. But the misfortune is, that these rules are imperfectly or not all complied with. The returns made to this office, with some exceptions, are deficient in accurate details of the modes of cultivation, of keeping stock, of expenses, and of other important incidents. These details would acquaint farmers and others with the precise manner in which the valuable results recorded can be again obtained, and would furnish the means by which a greater and more general progress would be made in practical agriculture.

The course adopted by our societies is, in the first place, to publish a list of premiums for excellence in certain agricultural and mechanical productions. Committees are then appointed to decide upon the claims of competitors. Their awards are made and sanctioned by the societies, and the names of the successful claimants of premiums are published in the newspapers. In some cases, the written statements, required by the societies from the claimants, accompany the reports of the committees; but more frequently there are none made, and the reports are meagre from the deficiency of materials from which to prepare them. It seems important, as well for the interests of the societies as for the full accomplishment of the good results contemplated by the Act of 1845, that all our agricultural societies should not only establish rules requiring these statements, but should enjoin and require a rigid adherence to the rules, as a necessary condition of awarding their premiums. By pursuing this course from year to year, our farmers would soon acquire habits of accurate observation and exact recording of processes and results. From the documents thus produced, the whole agricultural community would learn what is most valuable in farming and most worthy of imitation; and would learn, too, how to imitate it. Farmers would thus be the teachers and the taught. Throughout the Commonwealth, they would form a class for mutual improvement. They would not and could not complain of such instructors as mere book-farmers, but would strive themselves so to excel, that their own course of husbandry should be submitted in print to the imitation of others.

Another source of valuable information for the pages of the annual volume, is supplied by the public addresses usually delivered on the days of holding the exhibitions of the societies. These addresses are generally prepared with care by competent individuals; and, besides aiding the cause of agriculture by impressing on the farmers, assembled from different parts of the same county, the importance and dignity of their calling, usually convey a large amount of sound and judicious hints as to the practical details of the pursuit. These addresses are frequently given to the public through the press,—a practice

which doubtless exerts a wholesome influence in causing them to be prepared not merely for rhetorical effect, but for profitable perusal in print.

It is probable that in Massachusetts we have as enlightened and skilful cultivators of the soil, as in any other section of the Union. It is gratifying on such a point to meet with such a testimony from a highly intelligent source, as that recently borne by Benjamin P. Johnson, Corresponding Secretary of the New York State Agricultural Society. "Look at Massachusetts, that noble Commonwealth. Look at her agricultural associations, sustained and patronized by the Government, and witness the results of their efforts. The Empire State is indebted to Massachusetts for almost every superior implement of husbandry; and her agricultural products, upon a soil far less fertile and favorable for cultivation than ours, are such as to require the most improved and efficient system of husbandry to equal her."* Nor can it be questioned, that to the efforts of our agricultural societies is to be attributed, in a great measure, the general advancement in practical agriculture among us. They have encouraged by premiums, and stimulated by honorable competition. They have excited greater interest in the objects of agricultural labor, diffused information respecting it among the people, and elevated the standard of good husbandry.

By the legislative act of last year, an additional impulse is provided to improvement in agricultural science and practice. It remains for the several societies to make it availing for its object. To the wise and efficient exertion of the managers of these institutions must the State look for the coöperation of their members and of the receivers of their premiums, in furnishing such information connected with agriculture as will reflect credit on the institutions themselves, and on the Commonwealth.

The volume prepared for the present year is, of necessity, imperfect in the amount and value of its contents. It contains, however, many facts, that, in the words of the Act, "are worthy of public notice, study and application." A French statesman lately said, "France is a soldier." Whether, on occasion, Massachusetts has been able to assert that character, her history for two centuries may show. The Statistics, just published, of the produce of the mechanical skill of the Commonwealth, may be thought to justify the far more satisfactory eulogium, Massachusetts is a manufacturer and a merchant. In the Reports of her Board of Education, as well as in the fruits of the studies of her citizens, is some evidence that Massachusetts pretends to be a scholar. Such publications as the present may lead the reader beyond her borders to suspect that, in the face of some natural discouragements, Massachusetts has energy enough to be a farmer. And he needs only a better acquaintance with her condition, to learn that the farm-houses, that speck her shallow and rugged soil, breed men to make her honor and prosperity in all the walks of life.

In the preparation of the volume, as a first experiment in this Commonwealth, it was thought judicious to study brevity; and a leading principle in

* Transactions of the New York Agricultural Societies for 1843, p. 397.

making selections was to present whatever was peculiar to any society, so as to afford a variety of information to the reader, and extend the knowledge of local experiments. On the other hand, in some particulars, it is meagre from want of materials. It might have been advantageously enlarged, if all the returns had been equally rich in their specimens of reports of committees, and of statements of successful competitors for premiums.

In the preparation of the Abstract, I have availed myself of the well known judgment and talent of the Honorable Allen W. Dodge, an experienced farmer of Hamilton, in the county of Essex.

Using the latitude of discretion, which the law appeared to intend to give to the Secretary, I have, in an Appendix, enriched the volume with specimens of the addresses delivered before three of the Agricultural Societies during the past year. Those of Mr. Stone and Mr. Foote had been previously published, and were already in the hands of many readers. That of Dr. Hitchcock, now appearing for the first time, is printed entire. After these selections had been arranged for the press, and nearly the whole volume was in type, the manuscript of another valuable address was kindly furnished, which it would have been highly gratifying to use in enlarging the collection. But the volume had already swelled to an unexpected size, and any extension would have hazarded the delay of its publication beyond the period of the session of the Legislature.

In the return of the Massachusetts Society the statement of its recent valuable importation of foreign stock is not accompanied by any description of the animals. Believing that the subject would attract the particular attention of farmers, I have placed in the Appendix a full description, which appeared in the columns of the "New England Farmer," after the bulk of the volume had been printed.

J. G. P.

Secretary's Office;
March 17th, 1846.

ABSTRACT

FROM THE

RETURNS OF AGRICULTURAL SOCIETIES.

ABSTRACT.

MASS. SOCIETY FOR PROMOTING AGRICULTURE.

The return of the doings of this Society consists only of the following statement, which is published entire.

The undersigned, as Recording Secretary of the Massachusetts Society for promoting Agriculture, in compliance with the requisitions transmitted to him by the Secretary of the Commonwealth, respectfully reports;

That, at the monthly meeting of the Board of Trustees of the Society, held in January last, the Committee on Premiums made a report, offering premiums as heretofore on various modes of culture, on stock, on inventions, on farms, and a premium for the best essay on diseases of animals, which report was accepted. The offer of a premium for the best essay on the diseases of animals was subsequently modified.

The subject being discussed, it appeared that this department of medical science had been little regarded in this Commonwealth; that if an animal became sick, or was wounded, regular practitioners were not usually summoned, and the farmer had to depend upon any one in his neighborhood who had acquired a reputation, by some little experience, for skill in cases of diseased animals. It was therefore voted, that Dr. Warren, one of the board of trustees, be authorized to offer pecuniary aid to any student of medicine (whom he thought qualified for the purpose) to assist him in completing his education abroad, upon the

condition that he should give a portion of his time and particular attention to the Veterinary establishments, for the relief and recovery of wounded or diseased animals, in Europe, and especially in France; that he should attend the lectures of the most eminent surgeons on these subjects, to qualify himself to deliver lectures, as well as to practise in this department of science, on his return.

The vote accepting the report of the committee on premiums having been re-considered, a full discussion ensued, and the board came to the conclusion, that the distribution of their funds in premiums as heretofore offered and awarded, (viz., on stock, imported or native, on various modes and objects of agriculture, on the greatest quantity of produce on an acre, on the produce of the dairy, on implements and inventions, on orchards, hedges and forest trees, on the culture of the mulberry and the manufacture of silk, on the culture of the beet and the manufacture from it of sugar, for the best essays on given subjects, for the mode of destroying, if any there were, the insects destructive to vegetables and to trees and to bees, for the best managed farms, and various other objects of great importance to farmers,) had for the time produced the desired effect. It had stimulated the working men of the Commonwealth to effort and investigation, and had done great service by inducing careful experiments and accurate noting of the time, manner and circumstances in which the experiments had been made, thereby giving exact and absolute knowledge whether the experiment proved successful or not.

The board were therefore of the opinion that an intermission of their usual offers, for a time, would be beneficial, and they hoped to excite a new interest in rearing stock, by an importation of the best breeds of milking animals, as well as combining strength and aptitude to fat, that could be obtained, and holding them until they had so multiplied that their stock might spread over the State, at a small expense, compared with the expense of importation, and, therefore, in May last, they voted to appropriate their funds to the importation of stock.

It was assumed, as a fact well established, that care, skill and judgment in raising animals remarkable for their size, strength, docility, and, if cows, for the quantity or quality of milk, would

insure in certain breeds, an excellence in either quality at least equal to the parent stock; and, if one of superior excellence should appear, that this superiority might be preserved in the descendants. This theory had been long tested in Europe, where bulls remarkable for the character of their stock become exceedingly valuable, whereas it was rare in this Commonwealth for farmers to keep bulls long enough to know the character of their stock as milkers. With the hope, therefore, of encouraging more attention to the breeding of stock, and to introduce the breeds now most highly prized in Great Britain, the board of trustees voted that an agent be selected and supplied with funds, to go to Europe and purchase animals of the highest character for purity of blood in the breeds of Ayrshire in Scotland, and of North Devon in England, and if he should meet with any other breed of high esteem as an *improved* breed, to select and bring home a pair, in order to test their qualities in this country.

That, so authorized, an agent did proceed to Europe, and in October last returned, and brought with him, in health and fine condition, four cows and a young bull of the Ayrshire breed, and four cows and a young bull of the North Devon breed, at a cost of $2,582 02; that their agent was fortunate in procuring, at fair prices, animals of the highest character for productiveness, and the trustees have the fullest confidence that in this importation they shall most effectually promote the substantial interests of the farmers of Massachusetts.

The undersigned further respectfully reports, that the said stock are for the present at the farm of Mr. Phinney, one of the board of trustees, and that it would be a great pleasure to him and to the board, to have the animals, their pedigree, and the report of the agent who selected them, examined by any gentleman interested in the improvement of stock.

All which is respectfully submitted by

BENJ. GUILD,

Rec. Sec'y of the Mass. Society for Promoting Agriculture.

December 13, 1845.

ESSEX AGRICULTURAL SOCIETY.

From the Reports of the Committees of this Society, and the statements accompanying the same, the following extracts are made.

Ploughing with Double Teams.

There were thirteen competitors [at the Cattle Show and Fair, September 24th,] to whom lots of one quarter of an acre each were assigned by lot, to be ploughed not less than seven inches deep. The time, in which the work was done, varied from thirty-five to forty-four minutes. Notwithstanding these trials have been so often repeated, they are still received with increasing interest, and every succeeding year brings to notice some valuable improvements. The committee are strongly impressed with the superior value of those ploughs which lay the furrow-slice flat and even, especially in the cultivation of grass. Care should be taken by the ploughman that he does not cut a wider furrow than the plough was intended to cut, and then it will be entirely smooth in appearance, and we know of none superior for this purpose to those manufactured by Ruggles, Nourse & Mason.

For the committee,

W. SUTTON.

Ploughing with Single Teams.

From these experiments, we learn that an acre of land may be ploughed by a single pair of cattle and one man in four hours, and probably nearly two acres in a single day. When we take into view the expense of operating a team of this description, compared with those usually employed in this business, it will be quite well for our farmers to consider whether most of their work cannot be done with one pair of cattle, and if two pair are to be used, would it not be better to cut the first

furrow of less depth, and apply the power of the second pair to a SUBSOIL plough, to follow directly after? If we do not entirely mistake the signs of the times, our modes of preparing land for culture will ere long be essentially modified by the use of the *subsoil plough.* In the County of Worcester, where the management of land and teams is understood as well as in any part of the Commonwealth, the premiums are limited to *one pair of cattle without a driver.*

For the committee,

J. W. PROCTOR.

SUBSOIL PLOUGHING.

The only entry of subsoil ploughs was made by Mr. Benjamin Poore, of West Newbury, to whom the Society has been often indebted for contributions to its shows. He presented to the notice of the committee two subsoil ploughs, of Ruggles, Nourse & Mason's manufacture, number one and medium size; one of Howard's and one of Prouty's new pattern. These were successfully tried with two yoke of oxen attached, and their working examined by your committee. They all did the work of stirring the soil well, and the committee will not attempt to decide on the relative merits of the respective ploughs on a trial necessarily very limited. They were inclined to think the double wing, attached to Howard's plough, an improvement, as giving a steady motion to the plough, without much increasing the draft. The farming interest is greatly indebted to these enterprising plough manufacturers, for offering them very good subsoil ploughs at a moderate cost, in so short a time since the implement was first known in this country.

Farmers every where, who have tried subsoil ploughing, concur in representing it as beneficial in draining wet lands, and in counteracting the effects of drought on dry soils; and your committee believe its advantages will be made apparent to all who will make a trial of it.

For the committee,

J. H. DUNCAN.

Working Oxen.

Twenty entries were made.—The committee consider that there are more difficulties in the way of deciding correctly upon the merits of working oxen, than in any other department of the exhibition. The committee on ploughing can examine the work done over and again. On the dairy, they can bring specimens in immediate contact. The important points in animals can be placed side by side. So with domestic manufactures, with fruits and flowers. Not so with working oxen. Each pair goes its round, and when twenty teams have followed in succession, the decision must be made from the recollection of impressions made on the committee's minds at the time of drawing. If differences of impressions exist as to certain trials, *recollection*, and not actual inspection, must decide the issue.

The ages to be brought under the notice of the committee range from four to seven years; and in making up their award, they are required to take into view the size, power and training of the teams.

The power and training, with a load of any given weight, are matters which must be left to judgment and fancy. But size can be brought to a surer standard. And the committee would here recommend that in future all cattle entered as working oxen should be weighed on the day of trial.

As to age, cattle frequently pass from one to another, as being younger than they really are, and as many of the working oxen in this county came by purchase to their present owners, their true age may not be well defined. And thus cattle may be entered as seven years old, without any certainty that they are not more.

In order that the rule should effectually bar all entries of cattle over seven years old, some evidence should be required more than simply, they are called no more.

The committee award to Jonathan Berry, Jr. of Middleton, the first premium of $10, for his speckled face cattle, five years old. They were large of the age, well formed, not full in flesh, well matched as to strength and temper, and well trained for cattle of that age.

They award to S. B. Swan of Danvers, the second premium of $7 for his red oxen, six years old. They worked well. The near ox was by the committee considered the best working ox exhibited.

They award to Josiah Low of Essex, the third premium of five dollars for his red ox, reported seven years old. They were probably the largest and strongest pair of cattle among the whole entered; still the committee did not think they worked as even and true as some others.

We can say, in making up the above award, we endeavored to refresh our recollections, as to the defects and good qualities of every pair of cattle brought under our notice, and the foregoing is the result of our observations at the time of drawing, and not from any knowledge how the several pairs of cattle might work when not surrounded by a crowd of spectators.

In behalf of the Committee,

MOSES NEWELL.

Milch Cows and Heifers.

The committee recommend that the first premium, of ten dollars and Colman's Agricultural Report, be awarded to Henry Creesy of Salem, for the best cow, six years old.

Second premium, of six dollars, to Warren Averill of Ipswich, for the second best cow, seven years old.

Third premium, of four dollars, to William Williams, of Rowley, for the third best cow, seven years old.

Only five cows were entered for premium. Although all that were entered were of the native breed, they were excellent cows; and, taking into view the small expense of their keeping, must have produced a large net profit.

Statements of the manner of keeping, and quantities of milk and butter each produced, accompany this report.

For the Committee,

T. CUTLER.

Henry Creesy's Statement.

The cow which I offer for exhibition and premium, is six years old. She calved the 21st of May, and has given milk as follows:

From May 21st to June 21st, . .	1,469 lbs. 4 oz.
" June 21st to July 21st, . .	1,264 lbs.
" July 21st to August 21st, . .	1,127 lbs. 8 oz.
" August 21st to September 21st. .	956 lbs. 8 oz.
Total,	4817 lbs. 4 oz.

We sell most of the milk, but in order to ascertain the quality of her milk, we have made butter from it, and find that it takes nineteen pounds of milk to one pound of butter. Her keeping has been good grass feed, with the exception of seven weeks, when she had two quarts of shorts per day. The said cow was raised by John Bartlett of Marblehead, and has been owned by me two years and six months.

Salem, September 24th, 1845.

Warren Averill's Statement.

I offer for your inspection my cow Flora, of native breed, six years old. The said cow calved on the 21st of last April. The calf was kept to her until the 13th day of May. With what milk the calf left, and all after taking the calf from her until the 20th of May, we made 20 lbs. 8 oz. of butter. Beginning at the 20th of May, we kept an account of the milk by weight, morning and night, for the four months following, which is 4,375 lbs. Butter from said milk, 211 lbs. 2 oz. From the 20th of May to the last day of June, inclusive, 84 lbs. 2 oz. In July, 52 lbs. In August, 43 lbs. Twenty days in September, 32 lbs. 2 oz. Said cow would have risen 35 lbs. in September, had she not met with an accident by getting one of her teats jammed on the 14th, in consequence of which we did not use the milk from that quarter of the bag for butter. The first fourteen days in September, she made 24 lbs. From the 20th of May to the last day of June, she gave 1,597 lbs. of milk; in July, 1,115 lbs.;

August, 987 lbs.; twenty days in September, 676 lbs. Average through the four months per day, 35 lbs. 105-122. To July, 39 lbs. 37-40; July, 36 lbs.; August, 32 lbs.; September, 33 lbs. 16-20. Average on the butter to July, 19 lbs. In July, 21 lbs. 23-52; August, 22 lbs. 41-43; September, 21 lbs. 4-32. Through the season, four months, 20 lbs. 155-211.

Manner of keeping said cow. After she calved, I commenced giving her two quarts of meal per day, until the last day of May. The 20th day of May, I put her to pasture by herself. Her pasture was good through June; the first week in July it failed, so I took her out, and put her in an old pasture with other cows for three weeks, to let my pasture grow. I then put her back again in my pasture, and kept her until the 24th day of August, when I put her with another cow in new feed. I commenced giving her the 30th of August one quart of Indian meal and one quart of rye meal every night. She had no meal, roots or any thing, only what the pasture afforded, from the 1st day of June until the 30th day of August.

Ipswich, September 23, 1845.

William Williams's Statement.

The cow offered for a premium is seven years old, and of native breed. She calved Feb. 6, 1845. The calf sucked till he was six weeks and three days old, and was then sold to a butcher for ten dollars. During these six weeks. I sold fifty-two quarts of milk from her, and made seven pounds and a half of butter. The calf had nothing but what he got from the cow. She gave, from the time the calf was taken from her till the first of August, from fourteen to fifteen quarts per day, which was a few days over four months. She gives now eight quarts per day. She had nothing but salt hay till she calved, then she had for two months one foddering of English hay at noon, and half of a bushel of carrots per day. After the two months, she did not have the carrots, but had one foddering of English hay at noon, and salt hay night and morning, till pasture time. She has had nothing but what she has got in the pasture since, and that is very short as it has been so dry. The first two weeks after she calved, she gave ten quarts of milk per day more than the calf could suck.

P. S. She made nine pounds of butter per week till pasture time, then the milk was put with that of the rest of my cows.

Rowley, Sept. 23, 1845.

On the Dairy.

The committee report that at no former show has so much and so good butter been exhibited. Mr. Lane's September butter was in tin boxes, so constructed as to contain pound lumps in each of the apartments, with a reservoir in the centre for ice, which keeps the butter cool and hard in its passage to market in the hottest weather. This appears to be an improvement. The committee consider the quantity made, as well as the quality. For this they must depend upon the statements of the competitors, some of which are exceedingly vague and indefinite. For example, "27 lbs. butter made by the daughter of Mr. —— ——, of ——, from nine cows in five days, in common pasture feed." The butter which accompanied this very brief statement was of excellent quality. Some of the samples, which certainly deserved better treatment, had no statement of any kind. Nineteen samples of September butter, and seven of June, were exhibited. It is recommended that the statements of the successful competitors be published, and that the premiums be awarded as follows:—

For June butter, to George W. Dodge, Wenham, 1st premium, $10, and Colman's European Agriculture.
to Benjamin T. Lane, Danvers, 2d premium, $8.
to Allen W. Dodge, Hamilton, 3d premium, $6.

For Sept. butter. to Warren Averill, Ipswich, 1st premium, $10. and Colman's European Agriculture.
to George W. Dodge, Wenham, 2d premium, $8.
to Daniel Putnam, Danvers, 3d premium, $6.

For the Committee,

DANIEL P. KING.

George W. Dodge's Statement.

I present for your inspection, one box of June butter, containing 25 lbs., being a specimen of 132 lbs. made between the 1st of June and 9th of July, from 5 cows; also, 2 boxes of September butter, containing 27 lbs., being a specimen of 405 lbs. made between the 20th of May and 20th of September, from the same cows. Their feed has been common pasture until August; since then, the pasture being very poor and dry, we have fed them night and morning with green corn fodder, which was raised for the purpose.

Process of Making. The milk is strained into tin pans, where it stands from 36 to 48 hours. It is then skimmed, and the cream put into tin pails, standing on the bottom of the cellar; a little salt is put into the pails before putting in the cream, which, at the times of addition, is stirred. We churn twice a week. The butter-milk is thoroughly worked out by hand, no water being used for that purpose. In warm weather, the cream is lowered into the well the night before churning. Immediately after the butter-milk is worked out, the butter is salted with an ounce of ground rock salt to the pound, and in about 24 hours it is again worked over.

N. B. The June butter is packed down in layers of five pounds each, and salt sprinkled between; the top is covered with salt, and the pot is set on the bottom of the cellar.

Wenham, Sept. 24, 1845.

Benjamin T. Lane's Statement.

I offer for your judgment one pot of June butter, containing 25 lbs., and two boxes of September butter, containing 34 lbs., being a specimen of 475 lbs., made between the 20th of May and the 20th of September, from the milk of eight cows, one of them commencing the middle of July. We have sold, in addition to this, 291 gallons of milk, and 12 quarts of cream, besides using milk for a family of seven persons. The cows came from the barn in the spring, in good condition, since which time they have run in a common pasture, and since the first of August

have been served with a foddering of corn at night, planted for that purpose.

In the process of making, the milk is strained into tin pans, and placed in a cool stone dairy cellar; and, after standing from 36 to 48 hours, it is skimmed, and the cream put into stone pots, where it remains, standing on the brick floor of the cellar, till it is ready for churning. We churn twice a week. When the butter is formed, the butter-milk is drawn off, and the butter washed twice with cold water. We use rock salt, and, in preparing it for use, we mix thoroughly together one quarter of a pound of loaf sugar and three quarters of a pound of salt. One ounce of this mixture is used for a pound of butter. After 24 hours, the butter is again well worked, and weighed in pound lumps. The tin boxes, in which our butter is marketed, have reservoirs in the middle to contain ice, by means of which the butter reaches the customers perfectly cool and hard in the hottest weather.

Danvers, Sept. 23, 1845.

Allen W. Dodge's Statement.

I offer for your inspection a pot of June butter, of 25 lbs. I also offer as a specimen of September butter two boxes, containing 30 lbs. churned on the 20th inst. Up to that time, we have made the present season 1,180 lbs. The following statement I send in compliance with the rules of the Society.

1. The number of cows kept is thirteen, all of native breed.

2. Their feed in winter was hay of good quality, so that they came from the barn in the spring in good condition. Their pasture has been very short, owing to the excessive drought. Since the middle of July, they have been fed at night with green corn fodder.

3. *Treatment of Milk and Cream before Churning.* The milk is strained into tin pans and placed in a cool cellar for the cream to rise, which will be according to the weather. The day previous to churning, the cream is, in hot weather, lowered into the well, in tin pails or cans, in order to become cool. The butter thus comes of a hard consistency, and no difficulty is experienced in making it free of butter-milk.

4. *Mode of churning.* Soak the churn with cold water over night. We have used the present season Kendall's Cylinder Churn, which we think a decided improvement. It has many advantages over any we have heretofore used. Churn once a week, two days before the butter is taken to market.

5. The method of freeing the butter from milk, is by working it thoroughly with the hands. It is never rinsed in water. The day after being worked over, it is put into lumps of one pound each, for market.

6. *Salting of the butter.* Use the ground rock salt, and salt to suit the taste, generally about three quarters of an ounce to the pound. The sample of June butter had added to it a small quantity of loaf sugar and saltpetre, to aid in preserving it.

Besides making the above quantity of butter, we have used milk for eight in the family.

Hamilton, Sept. 22, 1845.

Warren Averill's Statement.

I offer for your inspection one pot and box of September butter, containing 32 lbs., being a specimen of 211 lbs. 2 oz. made from one cow since the 20th day of May until the 20th day of September, inclusive.

Process of Making. The milk is strained into tin pans, and stands from 24 to 36 hours in a cellar, when the cream is taken off and put into a tin pail. We churn the first part of the season once in four days; the latter part, once a week. The cream is brought from the cellar in the morning, and strained through a cloth into the churn. After it is churned, (which has taken on an average, seven minutes,) the butter is taken out of the churn, put into an earthen pan, and water put with it. This is repeated until the butter-milk is thoroughly rinsed from the butter, so that there is scarcely any color in the water. The butter is then worked over. Then it is put into an earthen pan, and salted with one ounce of salt to a pound of butter. It is then worked over again thoroughly, piece by piece, then made into balls and put into the cellar, fit for market.

I keep two cows, Flora and Kendall. Flora I keep for but-

ter; Kendall I keep for milk to sell, and use in the family. Flora has made 211 lbs. 2 ounces of butter since the 20th day of May to the 20th day of September, inclusive.

Ipswich, Sept. 23, 1845.

Note. The manner of keeping the above cow and her yield of milk, are given in a preceding statement.

Daniel Putnam's Statement.

I offer for your inspection two boxes of September butter, containing twenty-six pounds, being a sample of six hundred and fifteen pounds, made between the 20th of May and the 20th of September, from the milk of eight cows, some of which have been nearly dry a part of the season, having calved last autumn. The milk of more than one cow has been sold and used in the family, so that it would not be more than the average milk of six cows. Their feed has been a poor pasture, one quart of meal per day, with some mown grass or corn stalks.

Process of making the butter. The milk is kept in tin pans. After standing from 36 to 48 hours, the cream is taken off and put into tin pails. We churn twice a week. When the butter-milk is drawn from it, we thoroughly rinse it in cold water; it is then taken from the churn, worked in part, salted, an ounce of salt and one fourth of an ounce of loaf sugar to the pound. In about 24 hours, it is worked the second time.

North Danvers, Sept. 24, 1845.

On Meadow and Swamp Land.

The committee have received but one application for premium. That entry was made by David Gray, of Andover, whose statement is handed in with this report. Upon examination of the meadow referred to, they found his statement well sustained by the appearance of the land and the crop standing upon it. They hope that his success will encourage many others to commence similar improvements, though they may be restricted at first to small fields. There is, probably, no way, in which those who have meadow land, can so easily increase the produce of their

farms, as by draining and cultivating their meadows. Your committee recommend that a premium be given him of fifteen dollars, and Colman's European Agriculture.

Your committee would observe, that it is their deep impression, that one of the best efforts that the Essex County Agricultural Society could make, would be to secure a scientific and practical survey of the meadows of the county. In this way, great and important principles might be developed, much useless labor saved, many disappointments avoided, successful enterprises accomplished with less expense, and the whole labor bestowed on this part of farming, be followed by much more encouraging reward. To give a single illustration:

Some meadows in this county are flooded with water which comes in the form of springs from the high lands in the vicinity, and can be easily drained by cutting ditches in the borders.

Others receive their water from springs rising up underneath, and require therefore a different process.

Many are simple basins, having a hard and impervious bottom. They hold the water which is rained upon them, and the little that runs in upon the surface of land around, as water runs into tubs from the roofs of buildings.

Some swamps no doubt are watered by a combination of all these sources.

Now, how obvious it is, that in draining these swamps a regard must be had to these circumstances! And how few, comparatively, are as fully informed, and at present have it in their power to be as fully informed, as would be good and profitable for them to be! How could the society do better than to investigate the subject, and inform the county? A few hundred dollars laid out in such a survey, would be followed by manifold more advantages than all the premiums that are likely to be given on reclaimed lands for many years.

For the Committee.

G. B. PERRY.

David Gray's Statement.

I commenced operations on my meadow in the autumn of 1842, with no practical experience in the business, by digging a ditch through the lowest part of the land, but the next year I found it did not clear it of superabundant water. I then ditched it on the shores, which effectually drained it. It was a peaty bottom, varying from twelve to thirty inches in depth, with a stratum of about three inches of clay, mixed with sand, immediately under which was a deep quick sand. In ditching, I cut through the clay into the sand, which effectually drained it. In the spring of 1844, I found it in a proper state to plant with potatoes, but too soft for ploughing. I then dug it with a spade, or, what the Irish call a *loy*, laying it in ridges about four and a half feet wide, with ditches between, from twelve to twenty inches in width. Before digging, I covered the ridges with gravel two or three inches deep. I then spread my manure on the gravel, and covered it by turning a sod each way, making it into ridges in the same manner that back furrows with a plough would do. A part of it I manured with common winter manure from the barn, and a part I manured with ashes made of peat cut from between the ridges. The early kinds of potatoes did well, but the later kinds were destroyed by rust when about half grown; still my crop averaged about four hundred bushels to the acre.

In the summer of 1844, I undertook to plough a portion which had not been cultivated, but did not succeed, it being too soft for oxen to travel on. I then dug it over with the Irish loy, laying it perfectly flat, as a plough would turn it without ridging it. I then covered it with a mixture of sand, gravel and loam, about three inches deep, applying about twenty cart-loads of compost manure to the acre. I then sowed it with herds grass and red-top the first week in September. It promised well when winter set in; but in the spring of 1845 I found some of it killed with frost, and the land in appearance somewhat spongy, to remedy which I sowed more grass seed.

The produce, this year, of 162 rods, is as follows:

73 rods planted with chenangoes in April, 110 bushels,	$80 00
53 rods planted with blues in June, 125 bushels, .	50 00
36 rods oats, on which no application of manure had had been made, except a few ashes last year, 1500 wt.	9 00
The 73 rods of land planted with chenango potatoes, was sowed with oats on the 5th and 7th of August, and there is now, September 4, by estimation, 3000 wt. to the acre.	15 00
	$154 00
Deduct ten dollars for rotten potatoes, .	10 00
	$144 00

The potatoes were planted by perforating the sod after it was turned, and the potatoes dropped in and then covered with a slight poke with the stick one foot asunder each way, making four rows on a ridge.

Andover, October, 1845.

James Marsh's Statement.

The piece of reclaimed meadow, to which I ask the attention of the committee, contains about four acres. A few years since it was considered worthless, not having been mowed for many years. A part was covered with bushes and stunted maples. In the winter of 1839, I cleared the wood and bushes from the part now improved. The sprouts have been kept down yearly.

In August 1843, I hired an acre dug over and laid level, (the stumps and hassocks thrown back) for twenty dollars. Such of the small roots and hassocks as became dry, I burned; the others were carted off as soon as the meadow became frozen. I then covered it with a loamy gravel, one inch thick; five days labor of two men and a boy, and two yoke of oxen. The work was done in the winter, when there was two feet of snow on the ground, too deep for other labor. I then applied a light dressing of manure, and sowed the grass seed April 15th. The

crop the first year was cut about the last of August, and yielded about one and a half tons. The present year, the acre yielded three tons of hay of prime quality. I regret the combination of circumstances that prevented the committee's seeing the crop while growing.

Danvers, Sept. 24, 1845.

[*Note.* The above mentioned premises were not visited by the committee, owing to the absence from the State of the chairman, at the time specified by Mr. Marsh for the visit.]

On Farms.

Three farms have been offered for the inspection of your committee, by Messrs. Daniel P. King, of Danvers, Christopher How, of Methuen, and Jonas Holt, of Andover.

The farms of these gentlemen were visited in July and September. During the past unusually warm and dry summer, Mr. King has been able to grow very handsome crops of Indian corn, hay, &c., upon gravelly loam, inclining to be dry, by the use of compost manure, the basis of which was peat mud.

Mr. King considers a compost made of three or four parts of peat to one part of stable manure, well mixed and fermented in the heap, to be better for gravelly or sandy loams, than the same quantity of stable manure. The good condition of his crops during the dryest part of the season was evidence of the value of this compost for such lands. Indeed, so highly does he value peat for this purpose, that he assured us he could not farm without it.

Peat, as a valuable ingredient in the formation of compost manure, has, hitherto, been much neglected by the farmers of this country. In Scotland, a pamphlet was published some time since, by the late Lord Meadowbanks, calling the attention of the Scotch farmers to peat as the basis for compost; three parts of peat to be used to one of barn yard manure, and fermented in the heap. Since its extensive use there, the agriculture of the country has been greatly improved. In Mid Lothian, a compost so prepared is said to stand cropping, whether by grain, of

all sorts, hay, pasture, and potatoes; and whether on loams, thin clays, sand or gravel, at least equally well with farm yard manure, and at the same time it alters and amends the texture of the soil.

Mr. King has made experiments with guano, salt, saltpetre and ashes. On one acre of meadow, upon which 300 lbs. of guano were spread in April, and sown with oats and grass seed, the crop of oats was heavy, and the grass seed has taken well. Indian corn grown upon guano was not as good as some grown beside it upon his compost manure. This, as the season has proved, was better than any fertilizer with which he experimented. Your committee were pleased with the clean culture of his hoed crops, with the smooth and workmanlike manner of inverting the sod, and re-seeding his grass lands after haying, and with the good condition of his working oxen and farm.

The farm of Mr. How is in Methuen, and consists of one hundred and seventeen acres; the soil, a gravelly loam, intermixed with stone, and good for grass. Some parts of the farm rise into large swells of considerable height, affording good pasture, and good crops when under cultivation. The ground at the base of these hills is too moist in the spring to admit of hoed crops, but produces large crops of English hay, and is kept in good condition for grass by an occasional top dressing.

Since 1819, when Mr. How came in possession of his farm, it has been increased from about fifty acres to its present extent, and from that time, when the place kept but six head of cattle, such has been his addition of uncultivated lands, and his improvement upon the whole, that he is now able to winter from twenty to thirty head of cattle, and to sell hay the last year to the amount of $600. The addition which Mr. How has made to his farm, and the great improvement upon it, is the result of well directed and persevering industry. Your committee regret that so good a farmer should be unable to give a precise statement of the expense of conducting his farm; but one thing he is certain of,—that no claims are allowed to stand against him unsettled.

The farm of Mr. Holt is situated in the South Parish, in Andover, and contains about sixty acres. He has been engaged in

subduing some very rough and stony ground, which may repay him for his labor, if the expense incurred be not too great. It was a question with the committee, whether he would not derive greater profit from his farm, by giving more attention to his field land now under cultivation. It is not always good policy to bestow much labor on subduing very rough ground, when less expense applied to the increasing of the produce of the land already under cultivation might add very much to the income of the farm. In consideration of his laborious efforts to bring under cultivation land very stony and rough, your committee recommend that a gratuity be paid him of eight dollars.

Your committee recommend an award of the first premium of twenty-five dollars to Christopher How, of Methuen, and the second premium of twenty dollars, to Daniel P. King, of Danvers.

JOSIAH NEWHALL,

Chairman.

Christopher How's Statement.

The farm that I offer for premium, contains one hundred and seventeen acres; sixty-two acres of pasturing, and the remainder mowing and tillage. The soil, a gravelly loam, and most of it was quite stony. I this year had five acres of winter-rye, which yielded 111 bushels; five acres of oats, 245 bushels; two and a half acres of corn, 143 bushels; one and a half acre of potatoes, 275 bushels; hay, I think, about 75 tons. In consequence of the drought, my hay, I think, fell short of my usual crop about 15 tons; my corn and potatoes were also considerably injured by the drought. My crop of apples was also very light. I had only about 30 barrels of winter apples. This season I have kept ten cows, and have made 769 pounds of butter, and 348 pounds of cheese. I usually winter from twenty to thirty head of cattle, as circumstances seem to require, and sell the remainder of my hay. I usually keep a considerable number of swine, for the purpose of increasing my manure. I usually hire two hands through the farming season, and my son through the year; and about forty dollars for additional help in haying.

I cannot give you an exact account of my previous expenses in managing my farm, as I have not been accustomed to keep an account.

I came on the farm in 1819. It then contained about fifty acres, and kept six head of cattle. All the addition that has since been made to the farm was pasture land.

For planting, I usually plough soon after haying, and in the spring spread from thirty to forty loads of compost manure, and plough it in. I have, to some extent, practised ploughing grass ground in the spring, and harrow in the manure, but prefer fall ploughing. I plant one year, and sow it down (usually) with oats and hay seed. As to rye, we have not been accustomed to raise it, as it has been considered an uncertain crop.

I top dress my land that is too wet for cultivation. I have purchased considerable manure, and have recently purchased a meadow about one and a quarter mile from home, from whence I have hauled considerable peat mud. I have, to some extent, used dry and leached ashes; sometimes they have done well, at other times very little or no benefit has been derived from them. I have also used gypsum, and it has done well, especially on pasture land.

Methuen, Nov. 3, 1845.

Daniel P. King's Statement.

Before the first of July, I had no intention of inviting you to visit my farm, but then learning that there had been no entry which would secure a report from you, I was unwilling that the Society should lose the benefit of a report, for I think farmers derive their best hints from the observations and experience of practical farmers, embodied in such reports.

I am far from thinking my management the best, or among the best; but, as it has fully answered my reasonable expectations, I will, as briefly as possible, state it.

My farm has great variety of soil, but the cultivated lands are mostly a gravelly loam. I have about fifty acres in mowing, tillage and orchard, twenty-five acres in meadow, one fourth of which is peat, seventy-five acres in pasture, and several tracts of wood land. I formerly planted from seven to ten acres

each year, but I have found it more profitable to raise hay than corn or potatoes. This last June, for thirty cwt. hay delivered in the barn, I received in my grain bins forty bushels of good yellow flat corn: the hay cost me, in labor and all fair charges, twelve dollars; to raise the corn would have cost me twenty-five dollars at least.

By recurring to my journal,* (for I have long kept a sort of diary, in which I have noted the employments of each day, the time of planting, hoeing and harvesting, the amount of crops, the cost of animals, current receipts and expenditures, &c.,) I find that, since the 1st of April, I have expended for labor two hundred and five dollars, and one third of this has been in making walls, ditches and permanent improvements. I have kept two pair of oxen, one horse and ten cows; one pair of oxen which two years ago cost me fifty dollars, I have sold to the butcher for one hundred and five dollars; four cows which cost forty-three, I have sold for seventy-eight dollars, and I have received in exchange of cows thirty dollars. I have kept no account of the milk and butter used and sold, which has been less than the usual quantity. I have four fat swine worth seventy-five dollars, which, one year ago, cost six dollars; their manure paid for all the grain they have consumed. I have raised one hundred and fifty-eight bushels of corn, ninety-five bushels of oats, thirty bushels of rye, and one hundred and twenty bushels of potatoes; of carrots, turnips and beets, about two hundred and fifty bushels, and of other vegetables and fruits an abundance. Some years I have had three or four hundred bushels of good apples, this year not more than thirty. I have cut thirty-one tons of English hay, which was made and secured with fifty-five days' labor; I used a horse-rake, which paid for itself in one week; my crop was diminished by the drought from one fourth to one third. My meadow hay was a fine crop, and got in, in good order; I have sold twelve loads of meadow hay and straw, and have, by estimation, fodder enough,

* The advantages of keeping a journal, to a farmer are many. By turning to the pages of past years, he will be reminded of work which should be done in its season; he will see where he has erred, and profit from his experience; he will know where his money, sometimes difficult to account for, goes.

corn fodder included, to keep my stock, and some twelve or fifteen tons to spare. I have carried to market twelve cords of wood, always taking a return load of manure. I purchase annually about forty-five dollars worth of manure, which I never use without composting. I have used for planting, sowing and top dressing, two hundred and eighty loads of compost. In the barn yard and pig pens, I make about one hundred and ten loads, and at leisure times get out peat muck and cart it into the field where it is to be used. I then mix one cord of stable or barn yard dung (preferring the stable) with four cords of muck; after lying till the heap heats, it is again thrown over, and a few feet of fresh dung or spent ashes added, if necessary. I have found this compost better than clear manure, and equal to any thing except pig manure for corn and potatoes on gravelly or sandy loams. I have now on hand more than one hundred loads of this compost, besides a good supply in the barn and pig yards, and I could not farm without it. With this kind of manure, I this year had sixty bushels of corn to the acre, without any extra labor or care. One fourth of an acre produced at the rate of seventy bushels, and I raised fifty-five bushels of oats on one acre; no great yields, certainly; but the expense of cultivation, too, was moderate. All the land on which I have this year raised potatoes, corn and oats, has been since ploughed, manured, and laid down with rye and grass seed, with the exception of one acre of meadow, which, in April, I sowed with oats and grass seed after spreading three hundred pounds of guano; the oat straw was very rank, and the grass has started handsomely. I have tried guano, salt, saltpetre and ashes this season, but I forbear to speak further of results, because you, gentlemen, have seen them, and will determine for yourselves.

My corn land I usually plant but one year; it is always ploughed in the fall, because the team is in better condition for work, more vegetable matter is ploughed under, and the soil sooner becomes mellow. I have practised ploughing in August or September, for rye; laid the furrow flat, rolled it, spread on from twenty-five to thirty loads of compost (thirty bushels to the load), harrowed well, then sowed one peck of herds grass,

and one bushel of red top, brushed it, and then laid all smooth with a loaded roller. My rye and grass have always done well; the straw selling from seven dollars to ten dollars per acre, and the grain bringing ten per cent. more than the southern. Directly after taking off a crop of hay, early in July, I have inverted the sod, rolled, harrowed in a good coat of compost, sowed one peck of millet to the acre, brushed, then sown grass seed, clover, herds, red top, and brushed and rolled smooth. I have never failed of getting a ton of millet fodder to the acre, and when the frost has delayed for about seventy days from the time of sowing, thirty or forty bushels of millet seed to the acre, and the next year, and for several years, a good crop of hay. But it is not prudent to sow millet after the tenth of July, on account of the frost; it should not be sown before the middle of May; best sown in June. In August, I ploughed two acres of land, which was this year mowed; rolled it flat, spread sixty loads of compost, harrowed it well, sowed one half bushel herds grass, and two bushels red top, then brushed and rolled it smooth. This process has always succeeded with me.

In planting my corn the present season, instead of cross furrowing, I ran the plough but one way, and not so deep as to disturb the sod, nearly filled the furrows, which were four feet distant in part of the field, with my common compost, in part with pig manure, then dropped the kernels in the furrows, six inches apart, and covered, leaving the surface of the ground even; in May, went between the rows with the cultivator and hoe, and again, the last of June, but making no hill, and this, with the exception of pulling by hand a few weeds, was all the culture. The crop, as you witnessed, was clean and heavy.

In October, 1842, I ploughed three acres of field land, which had been in grass five years, and rolled it. In May following, harrowed it and spread seventy loads of compost, which was well harrowed, then marked the hills four feet apart each way, dropped the corn and covered; in June went through with the cultivator and hoe, and late in July sowed grass seed among the standing corn, went through with the cultivator and hoe, making no hills; in October, the corn was cut up close, and the ground rolled with a loaded roller. On one acre I had one hun-

dred and two baskets of good corn, and the crops of grass have been fair. I have since followed this plan with better success, when I have used more and better compost.

I have this year let five acres of meadow and three pasture lots. I have top dressed my reclaimed meadows with a compost of loam and warm manure, and have further extended my experiments in reclaiming meadows. I have attempted some improvements on bushy and mossy pastures, which now promise well; on these, I have sown winter and multicole rye with some spurry and common grass seed.

If I have raised no large crops, the expense and labor have been moderate, and I have the satisfaction of thinking that my farm is in an improving condition.

Danvers, Nov. 4, 1845.

Jonas Holt's Statement.

I keep a hired man seven months, pay him thirteen dollars per month. I keep one yoke of oxen, one horse, five cows, and have four young cattle.

I compost all my manure, mixing the manure from the horse stable, the cow yard and the hog pen altogether, carry the manure out into the field from these several places in the fall, heap it up and cover the heap with meadow muck or loam. In the spring, I take what manure is made by the cattle and horse, carry it out into the field, and mix it with the heap drawn out in the fall. Where it is not too rough, I spread my manure broadcast, but where the land is very rough and stony, I put it in the hill; but I prefer the broadcast system where it is practicable.

I have dug, probably, about one hundred loads of muck, this summer, to lie and freeze for next year's use. I have dug fifty rods of ditch in the pasture (since you last visited my farm), thirty-six inches wide at the top, eighteen inches deep, and twelve inches at the bottom; and have ploughed seven acres of my bush pasture, sowed four acres with rye for feed, two bushels of rye to the acre; the remaining three acres I intend to sow with oats in the spring for feed, in order to test the compar-

ative value of oats and rye for feed. Where I sow rye, I also sow timothy at the same time, six quarts of seed to the acre; and in March or April, sow six pounds of clover seed on the snow, and let the rain cover it.

Andover, Oct. 22, 1845.

Fruit Trees.

The Committee on Nurseries of Fruit Trees, John M. Ives, Chairman, recommended that the first premium, of ten dollars, and Colman's European Agriculture, be awarded to Joshua H. Ordway, of West Newbury; and the second premium, of ten dollars, to Ephraim Woods, of Salem.

Joshua H. Ordway's Statement.

The trees, to which I would call your particular attention, are two lots of apple, one lot of from fifteen to eighteen hundred, two and three years old from the bud, the other of twenty-five hundred, one year from the bud, stocks four from seed, transplanted when two years old.

The following was the course pursued in raising the last named lot, which is, I think, the best method, on a soil like mine, which is rather difficult to cultivate, being a hard gravel and slate, with a strong clay subsoil, naturally ill adapted for raising trees or fruit. In the autumn of 1841, I ploughed about fifteen rods of land, eight inches deep, where corn grew that season, spread two loads of fine barn yard manure on the surface, and harrowed it smooth; I then, by line, made shallow drills three feet apart, into which I scattered pomace, as taken from the mill, sufficiently thick, covering it lightly, not exceeding half an inch deep; the trees came up well, were hoed several times, the unhealthy ones taken out. In two seasons, they made a good uniform growth. In the spring of 1844, they, being two years old, were transplanted (first cutting off the tap root), in rows four feet apart, ten inches from each other, care being taken to select those of uniform size and thrift; the remainder are set on another lot, not being of sufficient size to bud.

In August following, I budded twenty-five hundred with the best standard varieties, mostly winter fruit; the buds took finely; in several rows of one hundred each, scarcely a bud failed. They have made a very straight, uniform growth this season.

I practise shield or T budding, and put the bud on the southwest side of the tree, the rows running southeast, they are then not exposed to the sleet and snow of winter. I formerly lost many buds by inserting them on the "back" side of the tree. Another advantage in putting the bud on the south, is the greater portion and quicker flow of sap on that side, as every one knows that a bud takes best where there is the most sun and sap. I learned, some twenty years ago, to take out the wood from the bud, but soon gave up the practice. I should as soon think, now, of taking out the pith of a scion.

On a part of the ground on which these trees stand, the manure was ploughed in, and on a part, spread on the surface, in equal quantities; the latter is decidedly the best practice in nurseries; in fact, for any, and all crops, I have succeeded best, where I followed nature, and apply the manure to the surface, working it in with a harrow or cultivator, sufficiently to prevent evaporation. I use any manure in a fine state, which I happen to have when wanted, on the surface, working it in with a cultivator, the rows being sufficiently wide to allow a horse to pass without injury to the trees. I prefer, however, a compost, of stable and hog manure one part, and two of muck and turf from the brook.

I have never manured the same piece of ground oftener than once in three or four years. Much more depends upon good culture than high manuring, to obtain good healthy trees, besides being much more valuable for planting in orchards, not being of such "fungus" materials.

To the query of the committee, whether I could suggest some remedy to prevent young trees, as is common, from bending with the wind, I would say, that I know of no better one, than to raise strong stocks, that will throw up a vigorous shoot, able to resist the action of the wind, and let all the leaves remain on the trunk. The practice of many people of stripping them off, is very injurious.

I don't prune much, as the trees advance in age and size, merely cutting off superfluous branches, and keep a good balance of the top.

A word in regard to the time of transplanting trees to the nursery, or orchard. I have had much the best success, when removing them in early spring, with few exceptions. Young trees set in the fall, are liable to be thrown out by frost; and all, whether large or small, often suffer injury, by having their roots severely frozen, when the ground is bare, during our severe winters.

Ordway's Nursery, West Newbury, Oct. 30, 1845.

Live Fences.

The committee, Joseph How, Chairman, recommend that George Cogswell, of Bradford, the only claimant, receive the first premium, of twenty dollars.

George Cogswell's Statement.

A part of the hedge which I offer for premium, is hawthorn: the other part is buckthorn.

There are about seven rods of the hawthorn, which was set by me in the spring of 1834. The plants were then two years old, taken from a nursery at Indian Hill Farm, West Newbury, Mass. They were placed six inches apart, without any preparation of the soil. They were cut within *six inches* of the ground when set out; the September following, trimmed nearly back to the *first cutting;* spring following, in June, trimmed to within eight inches of the last cutting; again in September, trimmed nearly back to the spring cutting; and so on from year to year, to its present growth, which is five feet three inches high, and three feet thick. It is now eight years since the hedge was set; for the last three, it has been used as a fence to my front yard, and has proved an impenetrable barrier to any annoyance which might occur from numerous droves of cattle and swine. It has been kept free from weeds, and manured twice. No plant of the original number has died. During the summer, this presents a beautiful and delicate foliage, surpass-

ing that of any other hedge-plant with which I am acquainted. For some seasons, in September, its beauty has been marred by the slug-worm; besides this, it is perfect; cattle do not browse or hook it.

The buckthorn hedge was set out in the spring of 1839; the plants were then two years old; the mode of trimming has been nearly the same as the other. A part of the soil is moist, the rest somewhat dry. No plants have died. It appears hardy, and holds green till late in the season. As a hedge-plant, it requires a longer time than the hawthorn, having few thorns. The cattle browse it in some measure, and also hook it. This hedge is about seventeen rods in length.

The above statement was made by me to the Society, and published in its doings in 1842. Since then, both of the above mentioned hedges have been trimmed twice a year, generally in the months of June and August. At the present time, my hawthorn hedge measures five and a half feet in height, and three and a half feet in thickness. My buckthorn measures four and three fourths feet in height, and three and a half feet in thickness. The hawthorn has continued to flourish, and has retained its foliage the present season longer than ever before. The buckthorn has served as a fence to protect my garden for the last two years.

Hawthorn Place, Bradford, Sept. 23, 1845.

Vegetables.

The exhibition of vegetables has been gratifying to the committee, in the highest degree. This is partly owing to the fact, that, while there was no deficiency in vegetables of uncommon size, mere monster productions seem not to have been *sought for*, but a larger proportion of the articles were of the useful and indispensable kinds. The committee would particularly approve of every attempt to improve the potato, that valuable article, indispensable the world over. The efforts of Abel Burnham, of Essex, by which he has been able to produce thirteen kinds of seedling potatoes, apparently now full grown the second year from the apple, must strike every one as meritorious.

So the specimen of Indian corn, produced by Isaac Babson, of Beverly, accompanied by a statement of Rev. E. M. Stone, is exceedingly fine. Whatever may be the facilities for obtaining corn further south, every effort should be made to produce it in our own fields, and the idea of ripening it before the early frosts is most important; this is, perhaps, of more consequence than the mere abundance of the crop, attended with the usual uncertainty of ripening before the frosts of early autumn.

For the Committee,

D. CHOATE.

Edwin M. Stone's Statement.

The accompanying twelve ears of corn, of the twelve and eight rowed kind, I gathered from the field on Tuesday of last week (16th September). They are a fair sample of an acre and two thirds, cultivated by a neighbor, Mr. Isaac Babson, which was in proper condition to harvest last week. The corn was in silk on the 28th of June, and the stalks were fit to cut 18th of August, and were cut 25th of that month. Mr. Babson has planted this variety several years, and has uniformly obtained fifty bushels to the acre. He thinks his field will yield at that rate the present season. He plants four feet apart each way, and manures in the hill. The weight of this corn, when in order for grinding, has been found, upon trial, to be *sixty pounds* to the bushel, or *three thousand pounds* to the acre.

My principal object in procuring and presenting these samples, is to afford a practical demonstration of what farmers, with a little pains, may do, to bring their corn to early maturity. Mr. Babson's practice has been, for a number of years, to select his seed, in the field, from the fairest and most forward ears; and the result is, that his corn ripens a fortnight earlier than it did when he commenced planting this kind. This, it seems to me, is an important fact, and, if duly heeded by farmers generally, will place their corn crops beyond the reach of our earliest frosts, as well as the storms of October, which often beat down and soil the butt stalks.

Beverly, September 24, 1845.

Experiments on Manures.

No claims for the premiums offered under this head, have been made; the terms of the offer being for "an exact and satisfactory experiment in the *application*, as well as the preparation of manures." The only communication received is from Mr. David Wood, of Newbury, who, desirous of subserving the interests of agriculture, has favored the committee with a detailed statement of the materials used, and the manner in which he caused them to be mixed, in his compost heap. Manure is the essential element in New England farming, and the question, How can I obtain the greatest quantity at the least expense? should interest every farmer. The cattle ordinarily kept on the farms in this vicinity will not afford a sufficient supply of this essential requisite of good crops. How can this deficiency be supplied with the least outlay of money and labor? What materials are best adapted for compost, and how shall they be compounded? Mr. Wood's communication answers these questions, by giving the manner in which he prepared a large quantity of excellent compost. The subject of composting manure should be kept constantly before the minds of farmers; and, regarding Mr. Wood's suggestions as highly worthy of attention, we recommend that his letter be published in the Society's Transactions.

For the Committee,

J. H. DUNCAN.

David Wood's Statement.

At the request of several practical agriculturists, I am induced to call your attention to a compost of manure, prepared on my farm during the present year.

The heap is composed of materials as at foot, and placed in layers of from six inches to a foot, according to the nature of the materials. The heap has been saturated from time to time, with ten hogsheads of soap boiler's lye, and two hogsheads of urine from my stable tank. The heap was commenced in August, 1844, and increased, from time to time, as the materials re-

quired removing, or at "odd jobs," when there was no other employment for my hands and team, and finished in December. It was, however, opened in January (not having frozen on top during the whole winter), at the earnest entreaty of a neighbor, whose horse had died, and he wished the body interred.

The heap consists of,—

46 loads of strong manure from the hog yard,
71 " salt meadow sods, from the banks of the Merrimack,
8 " loam, top soil, where a road was formed,
5 " lime and hair from the tan pits,
6 " decayed chips from ship yard,
2 " anthracite coal ashes,
15 " potato vines,
2 " refuse sizing from steam factory,
2 carcasses of horses brought to the spot,
2 hogsheads of urine from my stable tank,
10 " of soap-boiler's lye, hauled from Newburyport.

The materials here used, with the exception of the manure from my stable, and five loads of matter from the tan yard, cost merely the labor of hauling. The heap was thrown over last week, for the first time, and upon opening, with the exception of about eighteen inches on the sides in thickness, which, by reason of an uncommonly dry summer, were baked hard, it was found in a perfect mass of decomposition, of about the consistency of brick-layers' mortar, emitting an odor so powerful, that I observed those occupied in throwing it over, eager to keep to the windward.

Of the carcasses, nothing was to be seen but the bones; the potato vines had entirely rotted; the meadow sods were hardly to be distinguished from the stable manure; and nothing remained in the state in which it was placed there, save the *coal ashes*, which I shall hereafter esteem, in a compost heap, as of no more value than *so much sand.*

The sides of the heap were thrown into the centre, and the whole well mixed and thrown into a compact heap, there to remain until next spring, when I intend to spread it on the land, plough it in, and plant with potatoes and corn.

Here I have a pile of 150 loads of powerful manure, at an

expense of about fifty dollars, and of double the value to the land, of manure for which I have paid heretofore two dollars per load, and hauled it from town.

I would earnestly recommend farmers to commence the compost heap, rather than depend upon the towns for their supply of manure. A salt or fresh meadow is accessible to almost every farmer, and this alone, after lying exposed to the sun awhile and dried, then saturated with lye from the soap-boilers', which any one can have about here *for the hauling*, makes a strong manure. The lye furnishes just the necessary materials to convert the meadow sods into an active manure, viz: potash. I consider a hogshead of lye of more value in a compost heap, than two loads of stable manure.

Dr. Dana, in his Manual, says: "The value of spent lye has been tested for a series of years, and has shown its good effects on grass lands, for four or five years after its application."

Indeed, so valuable is spent lye considered by Dr. Dana, as a manure, that he gives a receipt in his Manual, whereby the farmer may himself prepare it, should he live too remote from the soap-boiler. In many towns in New England, the lye is sold to the farmer as high as twenty-five cents per barrel; and one farmer writes me, that he buys and hauls it eight miles, to mix in his compost heaps. Yet, notwithstanding its fertilizing properties, thousands of hogsheads are allowed to flow in our gutters to the river, the citizen turning up his nose as he passes it, and the farmer crossing it with his team in pursuit of manure, at two dollars per load, when he has meadows that need ditching at home, and materials all about him for a compost heap.

Loudon, in his Encyclopædia of Agriculture, says, that the carcass of one dead horse will convert twenty tons of loam into a powerful manure; and yet how many carcasses are thrown into the Merrimac during the year, or suffered to remain in the pasture, food for birds of prey, and infecting the air for miles around.

There are few farms in the county, the crops of which may not be doubled by the application of manure. Farmers all admit this; but then, say they, we cannot afford to pay the price that is demanded for manure.

Let them go to work in earnest, and form their compost heaps; first cover a space, sixteen by twenty feet, with meadow sods, one foot high; leave this to the action of the sun for a month or two; then saturate it with a hogshead or two of lye, spread six inches of stable manure on the top of this, and cover it with potato vines, chip manure, weeds, or meadow mud; saturate this as before with lye, next a layer of stable manure, and so on, till the heap is seven or eight feet high. Let it remain a year, and upon opening it at the end of that period, my word for it, the compost heap will not be neglected the next year.

Woodland, near Newburyport, Sept. 23, 1845.

Domestic Manufactures.

The committee, A. M. Farley, Chairman, say, that "the articles entered for exhibition were more varied than in former years; and they are pleased to see that the mechanics of our county are making exertions for, and taking more advantage of, the exhibitions of the Society than formerly."

A gratuity of five dollars was awarded to George D. Varney, of Newburyport, for an important improvement in the Surveying Compass.

It has a vertical circle so attached to the compass, that vertical angles can be taken by it with perfect ease and precision. It has a level attached, and the usual apparatus for adjusting, and when your survey has been all made, and you wish to plot, by placing the instrument on the paper upon your table, it will measure off the angles of the survey with great ease, and with the same accuracy as the survey itself, because you use the same instrument. It may be used for a level for surveying land, taking heights and distances, and plotting. It is made by the inventor, Mr. Varney, in the neatest and most accurate manner; and it is difficult to say which most to admire, the ingenuity of the invention, or the skill with which it is manufactured.

MIDDLESEX AGRICULTURAL SOCIETY.

THE following account of the exhibition of the Agricultural Society in this county is given by its Secretary, Moses Prichard, of Concord.

The Society of Middlesex Husbandmen and Manufacturers, held their fifty-second Annual Festival at Concord, October 1st, 1845.

Cattle Show, as it is generally called, is, throughout the county, if not throughout the State, the farmers' holiday, and to be present on that occasion, and to bring to its exhibition some article or product, is a matter of calculation and enterprise with them for weeks and months beforehand. From almost every town and neighborhood they come to this fair, bringing the rarest and choicest of their fruits and vegetables, their nicest butter and their noblest cattle, and spend this one day, at least, in comparing the results of their own and other's labors, and in receiving and imparting information and knowledge on the many topics so interesting and useful to them.

The practical results of such an incentive, and the benefits of the information thus sown broad-cast through the county, are too immense to be numbered or known. They may be seen, however, by the most careless observer, in the improved appearance of the farms, and the more comfortable appearance of the families that line every road-side. Farmers, unlike the members of any other profession or calling, can meet on their own ground and devote it to their own purposes.

The morning of the day of our cattle show, this year, was very unpropitious, a violent rain preventing hundreds from attending; and thus not only reducing the number of articles for exhibition, but detracting very much from the interest and usefulness of the festival, by the absence of some of the ablest and oldest members of the Society.

Notwithstanding the rain, however, a large number were

present early, and the Ploughing Match, which came off at 9 o'clock, in a most pelting storm, was well attended. The whole number of double and single teams was twenty-five, and the zeal and earnestness of the ploughmen seemed only increased by the rain. The double teams ploughed nine inches deep, and the single, eight inches. The soil, a rich loam, was rendered heavy by the wet, but the work was never done better. Great improvement, both in ploughs and in the manner of using this important instrument, has been manifested within a few years, owing, in a great measure, to the influence of the annual trials at these exhibitions.

The cattle pens were well filled with very excellent specimens of neat stock, although this county is by no means a grazing county, and the number of cattle, raised in it but few more than is required to stock the farms. Of course it is from these that the specimens must come, and animals that are daily used will hardly compare with those which are kept for show or meat. The milch cows and heifers, in particular, were many of them remarkably fine animals for native breeds, one cow having given milk enough to make fifteen pounds of butter in one week, according to the certificate and affidavit of the owner. The bulls, both of native and cross breeds, were fine, large, well-formed animals, showing that greater attention is paid each year to the quality of the stock to be raised, even if the quantity is small. In swine, perhaps, more than in any other animals, has there been the greatest improvement. Those exhibited this year make a wonderful contrast in their small heads, short limbs and large bodies, with the gaunt, long-nosed, horse-limbed animals that a few years since filled the farmers' pens. This may be traced very directly to the influence of the reports of the Committees on Swine in past years, combining useful hints as to selection and care, and following with unmerciful ridicule the improper courses then adopted in these respects.

The exhibition of household and domestic manufactures was not large, but was very good and ingenious. That of lump butter was also very good. The display of fruit, perhaps, presented the strongest contrast over former years, and afforded the clearest indication of the benefits resulting from such exhi-

bitions, of any article or department. In place of a few choice specimens of native fruit, that had developed itself in a more than ordinary degree, here were tables loaded with the best and rarest kinds of apples, pears, plums, peaches, grapes, melons, &c., exceeding in quantity and quality the exhibitions of former years. Perhaps something of this may have been owing to the productiveness of the season, but still more is to be attributed to the exhibitions of the Society, which have demonstrated so conclusively that it is just as easy to obtain choice varieties and rich and abundant supplies of these articles, as the poor, meagre kinds formerly in use. Thus have been brought together from all parts of the county whatever fruits possess peculiar excellence, and our farmers have learned both where to procure and how to raise such as will afford a present gratification and a future profit. In no one department of agriculture has there been so much improvement as in the cultivation of fruit. Those engaged in it have at length learned that it is by far the easiest and most profitable part of farming; and having thus learned, they have demonstrated by this exhibition, that nowhere have attention and care produced greater results.

The drawing match was as usual well attended. At 11 o'clock, the Society formed in procession, and, escorted by the Bedford band, proceeded to the Court House, where they listened to an excellent address from Doctor Israel Hildreth, of Dracut. After the address, the several committees attended to the duties assigned them, and met the Society again at two o'clock, when all sat down to the annual dinner, and afterwards listened, while discussing the rich and bountiful supply of fruits from the tables of the exhibition, to appropriate sentiments and speeches from many of the members present, and at four o'clock, the premiums were publicly announced.

Accompanying the above return, is a list of the premiums awarded by the Society, the objects for which they were offered, and the amounts awarded for the same, at the close. The reports of the different committees, as returned, are very brief, with the exception of that on farms containing little else than an award of the premiums. By these, it appears that there were eleven milch cows entered for premiums, "all of them of

a superior quality," eighteen boxes of butter, of which the committee say, "that it is as good as any they ever saw," and eighty-five different specimens of fruit, for which premiums were awarded. Twelve double teams contested at the ploughing match, "all of which," say the committee, "performed the work in a workmanlike manner; so much so, that they were in doubt who were the successful competitors; but after due deliberation, they award the Society's premiums as follows:—

To Abel Moore, of Concord, 1st premium, . . . $10
(Plough—Ruggles, Nourse & Mason.)
To Andrew Conant, of Concord, 2d premium, . . $8
(Plough—Ruggles, Nourse & Mason.)
To Silas Holden, of Acton, 3d premium, . . . $6
(Plough—Ruggles, Nourse & Mason.)
To Joseph A. Smith, of Acton, 4th premium, . . $4
(Plough—Prouty & Mears.)

The committee were pleased to see so little use made of the lash; some made no use at all of it."

On Farms, &c.

The applications for examination and premiums, were more numerous this, than in any former year, being as follows, viz.: On farms eight, on reclaimed bog or lowlands ten, on apple orchards six, on peach orchards five, on pear orchards four, on plum trees one, on the manufacture of compost manure one, making a total of thirty-five, being six more than on any former occasion, all of which have been visited and examined by your committee. No premiums are claimed this year on white mulberry or forest trees, and none on cranberry meadows. In consequence of suggestions made by some of the applicants for premiums, that it might not be advisable to make too free a use of the names of the unsuccessful competitors, the committee have come to the conclusion to make use of those names only, which were successful in their applications. The committee, however, would remark, that some of the unsuccessful competitors were deprived of any premium from their peculiar

position, having received at some former exhibition a less premium than the highest; and in this connection your committee would further remark, that the improvements made by some of the applicants who have no premiums awarded, are by no means inferior, nay more, in more than one year within the last ten, would any of them have been entitled to the Society's first premiums.

The committee, however, did not confine their examinations merely to the farms and orchards of those who called them out, but extended their examinations and observations to many farms, orchards, bogs, &c., where no premiums were claimed. In doing this, the committee derive satisfaction in being able to say, that farming in general is now going ahead with greater speed in Middlesex than at any former period within the eighteen years, while a portion of the committee have had the pleasure of giving attention to some branch of this service. We do not mean to say that farming is more profitable now than ever before, but that improvements in farming, in some shape or other, are greater. We are willing to believe that the great temperance reform has exerted a powerful influence in aid of improved farming. Within the past month, we have examined hundreds of acres of low lands or meadow, which are in some stage of improvement, that five years since were almost worthless. In some cases, where the land did not produce any thing of value, now more than three tons of good hay are made to the acre annually. And again, in the article of compost, which is the main stay with a Middlesex farmer, the preparations for making are almost incredible. The committee have witnessed something like forty barn cellars in the course of their examinations, which have been put in a state of forwardness within the last year; and if every section of the county shall be in this proportion, we are willing to believe that in ten years there will be but few farmers in our county without a compost manufactory under his barn. In their examination of fruit trees, the committee regret to find so much disease, especially among the peach trees, which appears to be general, and thus far no one seems to know the origin, or the antidote. Notwithstanding all this, the committee have found some fine

peach orchards. In examining the apple orchards, it was found that the apple tree borers had almost disappeared; whereas, in former years, they were very numerous. This we account for, by the practice of keeping the land where the trees stand almost in constant cultivation. In examining the pear trees, especially those where a premium was asked, we found but two orchards that could possibly be entitled to a premium under our rules, and in these cases some of the trees were not so thrifty as was desirable. A cause for this stunted appearance we could not discover.

The committee believe that it was the intention of the trustees, when they instituted premiums on farms, to grant a premium to the person who should produce satisfactory evidence of having made the greatest improvements on his or her farm, within a given number of years, and not to the person who might happen to be in possession of the best cultivated farm at the time of the examination, unless it were made so by the present applicant within the last ten, fifteen, or twenty years. This has uniformly been the principle adopted by the committee. Acting upon this principle, we have found it very difficult, in many cases, to determine who has in reality done the most to improve his farm. This is the grand question, and involves two or three others, viz., how has he done it? when did he do it? what were his means? Here is a farm that was made beautiful by the Creator; here is another so completely the reverse, that a stranger, on passing the two, would be inclined to say, these represent the two extremes. This year, the committee have had both these farms to examine for a premium. The occupant of Paradise in miniature had done well. His fruit trees were not to be despised, and his buildings were princely. He was a working man himself, and he taught his boys to work also. How could a committee of common farmers, after having fared sumptuously at the rich man's table, have gone away without having it in their hearts to give him a premium. But wait a moment. Let us again look at that hilly, rocky, gravelly, muddy concern in yonder town. They do look and examine closely. They ask many questions, such as these:—what was the condition of this place when you came upon it twenty years ago? how were the fields, fences, buildings, &c., at that time?

Those heavy walls, which have been built since, must answer that question in part, and these, pointing to the very large ones still in the ground, must likewise speak. My means were small when I began here. I have built these walls, this house and barn, set out these trees, brought up and educated these children, yet I have had to work hard, and so has my wife, but we have always contrived to live within our income, and therefore I am now clear from debt. Now comes the question of means again. The occupant of Eden was rich when he began; he is so now. Question. Who shall have the premium? Answer. He of the great rocks, for he has had but one half his land to work upon, the other half being still covered with them. It is true, these are extreme cases, yet they are both found in Middlesex, which is full of variety. A portion of this committee have travelled much in the middle and western States of this Union, yet in no State have they found finer farms, or coarser ones, than in this county.

The committee would say one word more concerning reclaimed bog or swamp land. The zeal manifested by many who are now engaged in this most laudable enterprise, is worthy of all praise. In one instance, we were called to view a lot of reclaimed bog of about four acres, which was situated in a meadow more than a mile in length, a great portion of which is now in progress for English grass, and bids fair in eight years to produce a thousand tons of first rate hay, where, six years ago, nothing but a light crop of poor meadow hay, and a heavy crop of worthless bushes could be obtained. This large meadow was principally in one town. If other towns in the county do as well, Middlesex, as regards farming, is on the safe side.

The committee with great unanimity award the premiums as follows, viz.:—

To Ebenezer Richardson, of Pepperell, the Society's first premium of $25 00, for having made the greatest improvements upon his farm within the last ten years.

To Ephraim P. Spaulding, of Chelmsford, the second premium of $20 00.

To Aaron H. Felton, of Marlborough, the third premium of $15 00.

To Amos Carlton, of Chelmsford, the fourth premium of $12 00.

These gentlemen are all first rate practical farmers, and are making money with fair speed, not, however, with rail-road speed, but yet fast enough to be permanent. The committee would express a wish that there were ten thousand just such in the county.

Reclaimed Bog Meadows.

To Eliakim Hutchins, of Westford, the first premium of $20 00, for the most judicious improvement upon two acres of worthless bog meadow, within two years last past, and which now produces more than two tons of good hay to the acre, annually.

To Elijah Wood, Jr., of Concord, the second premium of $12 00.

To Schuyler Parks, of Lincoln, the third premium of $8 00.

Mr. Wood, having a hard subsoil in a portion of his meadow, practises the blind ditch system, that is, stones and covers over smooth. This is done to drain off the surplus water.

Apple Orchards.

To Abel Moore, of Concord, the first premium of $15 00, for the best apple orchard, set out since 1835, containing 150 trees.

To Thomas S. Tuttle, of Littleton, 100 trees, the second premium, of $12 00.

To Nathan Barrett, of Concord, 100 trees, the third premium of $8 00.

Peach Orchards.

For the best peach orchard, containing 144 trees, set out since 1843, to Jeremiah Russell, of Watertown, the Society's first premium of $10 00.

To Jeremiah Russell, Jr., of Watertown, more than 50 trees, second premium of $8 00.

Pear Orchards.

To John H. Marshall, of Framingham, for the best pear trees, 90 in number, set out since 1839, a part only being thrifty, the first premium of $10 00.

To Dr. Whitney, of Framingham, more than 20 trees, second premium of $5 00.

PLUM TREES.

To Simon Tuttle, of Acton, for 25 plum trees, set out since 1840, rather ordinary, the second premium of $3 00.

COMPOST MANURE.

To Augustus Tuttle, of Concord, for the best compost heap, not less than 20 cords, first premium of $10 00.

NAHUM HARDY, *Chairman.*

Statement of Augustus Tuttle.

In the first place, I have a lane 20 rods long by 20 feet wide, leading from my barn yard to pasture, where I keep my cattle. In this, I place from fifty to a hundred loads of peat mud, in order to pulverize it, which is done in a short time, by the cattle passing over it. I have a barn 70 feet long, by 40 wide, which I built in 1828, with cellar nine feet deep under the whole; after the mud gets sufficiently pulverized, I cart it (together with loam) into the cellar, to the depth of three feet under the stalls, that it may receive and retain the urine, as well as the droppings, for I consider the fertilizing qualities of the urine, nearly equal to that of the droppings. I frequently spread the manure, and throw on fresh mud and loam, also ashes and lime; and the hogs which I keep in the cellar, I find very useful in mixing the same. My stock, which consists of about twenty head of cattle and two horses, I keep in the barn all the time during the winter, and the manure made in the manner I have described, is, in my opinion, better in most respects, than any other.

WORCESTER COUNTY AGRICULTURAL SOCIETY.

In the return of the doings of this Society, its Corresponding Secretary, John W. Lincoln, of Worcester, states, that "The cattle show, exhibition of manufactures, and ploughing match, was had on the 8th of October last, and was highly creditable to the society. An increased interest appeared to be taken in it, by the attendance of a much larger number of spectators than has been witnessed at any previous year. An elegant, amusing and instructive Address, was delivered to a large and attentive audience, by the Hon. Benjamin F. Thomas. In consequence of his having declined to comply with the request of the trustees, as to the publication of his Address, no other publication has been made the present year by the society, except in the public newspapers."

From the premium list, reports of committees, and statements accompanying the same, the following selections are made.

Ploughing Match.

In their remarks on this head, in the premium list, the trustees say, "as they believe, that with one pair of well trained oxen and a skilful ploughman, the work, for every useful purpose, on a good soil, may be sufficiently performed, they have thought proper to discontinue the premiums for ploughs with two yokes of oxen, who do the work at great additional expense of labor, and they therefore offer for the best work with one yoke of oxen, driven by the ploughman. As the great object of this part of the exhibition is to excite emulation in the *construction* and *use* of the most important instrument of agriculture, the plough, the competitors in the ploughing match must not only own their respective ploughs and oxen, but *the ploughs must be those which have been used on their farms not less than sixty days previous to the exhibition;* and the ploughman, if he be not the owner, must be a man employed on the owner's farm by the month or year.

Selections from Report of Committee.

Twenty-two teams were on the ground. The work was completed at various times; from forty-two minutes to over one hour. The first premium of $10 was awarded to Elbridge G. Wheelock, of Millbury, himself ploughman.

Simon Carpenter, of Charlton, 2d premium,	$9
Thomas J. Wheelock, of Grafton, 3d premium,	8
Horace Stockwell, of Sutton, 4th premium,	7
Joseph H. Whitney, of Westborough, 5th premium,	6
Anson Warren, of Westborough, 6th premium,	5
Reuben Carpenter, of Sturbridge, 7th premium,	4
Allen Newhall, of Spencer, 8th premium,	3
Reuben Newhall, of Spencer, 9th premium,	2
William Eames, of Worcester, 10th premium,	1

It is a remarkable fact, that six practical farmers should have awarded the first premium, among twenty-two competitors, to a pair of two years old steers; but it is quite as remarkable, that they should have fully deserved it. A question was made by some of the competitors, whether two years old steers could be termed oxen, within a fair construction of the rules of the society; but the committee were of the opinion, that the term oxen, when connected with ploughing, was not confined to any particular age, but depended on their discipline and capacity to manage a plough; and that, within this definition, there were no animals on the field better entitled to the appellation than these steers. And besides, precedent has well established the rule. Double teams of two and three years old steers have several times taken premiums, and last year, a premium was awarded to a double team, one pair of which were yearlings.

Your committee have been amply compensated for their arduous services, by the high degree of skill manifested in the discipline of the cattle and holding of the plough. Skill in holding the plough! How strangely such an expression would strike the ear of a dandy, or of a shop-boy six weeks behind the counter! Yet there are very few mechanical operations requiring a more accurate eye, or more good judgment, than guiding the plough. Your committee were of opinion, and so

voted unanimously, that there was not a team on the ground which would not have been an honorable competitor in any common ploughing match.

REJOICE NEWTON, *Chairman.*

Fat Cattle.

The committee, after examining the animals and hearing the mode and expense of fatting, awarded the first premium of $12 to Seth Wyman, of Shrewsbury, for his red ox, weighing 2565 lbs. The second premium of $10 to Lewis Barnard, of Worcester, for his ox weighing 2190 lbs. The third premium of $8 to L. & E. L. Barnard, of Worcester, for their ox, weighing 2140 lbs. The fourth premium of $5 to L. & E. L. Barnard, for their ox, weighing 2190 lbs. The ox offered by Moses Gill, six years old, weighing 1800 lbs. was a very good ox, and the committee recommend a gratuity of $3 to Mr. Gill. The first premium of $10 to Nathaniel Dodge, of Sutton, for his off steer, a most perfect animal as well as fat, weight 1525 lbs. To Seth Wyman, of Shrewsbury, the second premium of $6 for his red steer, weighing 1615 lbs. And to Nathaniel Dodge, the third premium of $4, for his near steer, weighing 1490 lbs.

SALEM TOWN, *Chairman.*

Working Oxen.

Extracts from Report.

It is quite apparent that the interest of the people of the County of Worcester, in cattle, is large. If, then, by any process, this great interest can be increased in value, ought it to be neglected? The farmers can judge correctly, that, the basis of all that is desirable, we already have the raw material, the bone and muscle; what we need is a finer development of the properties of our cattle, more symmetry, greater aptitude to take flesh and deeper milkers. We can have all these, and at little expense. Let the farmers countenance those who import, and those who breed thorough-bred bulls and cows, because a con-

tinuance of the thorough breed is necessary to the improvement of our native stock. Let them take advantage of the opportunity thus presented them of engrafting upon their native breed properties which all good judges have decided that the foreign breed possess, and our fields, at no distant day, will present a still more delightful spectacle. The dairy maid will call for more pans, the good woman will send off an increased number of rolls of golden-colored butter, every week, to market; the shambles will be studded with larger and heavier quarters of beef; and, what is better than all, the farmer will have more dollars to shell out when his sons and daughters get married, or when the knock of the poor and unfortunate is heard at his door.

BELA TIFFANY, *Chairman.*

Bulls under One Year Old.

The committee report that the number presented for premiums was unusually small, being only six, but the quality of the few presented was excellent. They award the first premium to Moses Gill, of Princeton. His calf is six months old, native breed, from a two year old heifer, has had only his mother's milk, she feeding only on grass, weighs 600 lbs, and is extremely well proportioned. The second premium they award to Moses Ayres, of New Braintree, for his bull calf, 7 months old, 5-8th Durham and 3-8th native, nursed only an ordinary cow, not his dam, weighs 610 lbs, and is well proportioned. The third premium to M. Gill, of Princeton, for his bull calf $4\frac{1}{2}$ months old, native breed, dam an uncommonly good milker, nursed by an ordinary cow, weighs 511 lbs., is a calf of good promise. A first rate bull calf 3 months and 13 days old, weight 616 lbs., 1-2 Durham, belonging to Oliver Barret, of Bolton, was entered too late for a premium.

ABEL WHITNEY *Chairman.*

Milch Cows.

The first premium of $10 is awarded to Marshall Merriam, of Princeton, for his 9 year old cow. The second premium of $6 to Henry B. Leach, of Grafton, for his 5 year old cow. The third premium of $4 to William Cushman, of New Braintree. The fourth premium of $3 to William Eames, of Worcester. The fifth premium of $2 to Charles E. Miles, of Shrewsbury. The committee recommend to the Society's notice the half Durham cow, of Elias Ayres, of Barre. She excited the admiration of the committee in an especial manner. She is a very beautiful animal, and a very productive one. From the 10th to the 20th of June last, she gave 61 lbs. milk per day, and her butter made in that time was 25 lbs. and a fraction; from the 5th to the 12th September last, she gave 54½ lbs. milk per day and 11¾ lbs. butter per week. Mr. Ayres brought her for exhibition merely, judging that her being a native of another State excluded him from the list of competitors. The committee thought she might have been entered for premium, and recommend for Mr. Ayres a gratuity of $2 and his travel fees.

The cows presented for inspection were all beautiful and extraordinary milkers, but with one or two exceptions, their owners neglected to comply with the rules of the Society in furnishing such testimony of their qualities as the Society requires. The time of the committee was taken up in discussing the matter under the rules, and they were at a stand whether to refuse to award premiums to any so delinquent, or to break the rules. They have awarded the premiums, thinking that another year the careless fault may be cured, when competitors see the necessary result in getting a low premium when they might have had a higher, or getting none when they might have had the first. The committee would animadvert very strongly upon the carelessness which imposes so unnecessary a burden upon the time and patience of the committee.

HENRY S. WHEATON, *Chairman.*

Butter.

The committee report the whole number of entries, twelve; and award to

Joseph S. Hastings, Shrewsbury,	1st	premium,	$6
Charles E. Miles, "	2d	"	5
Samuel F. Shattuck, Worcester,	3d	"	4
Elijah Demond, Grafton,	4th	"	2

The quantity of butter, exhibited this year, does not bespeak that interest in an important branch of domestic production, which a just pride for the reputation of the county demands. There is scarcely an article of domestic production more generally used, or *one which varies more in quality.* It is by many considered an indispensable necessary of life, and if good in quality there are few who do not highly value it. The good and bad are produced from milk possessing the same properties. If good butter may be made from milk, and all milk possesses the same properties, then all milk is certainly *capable of producing* good butter. Your committee feel that there would be less complaining and more good butter, were the food of the cow always sweet and good, the milk kept from all offensive odors or impure air and at a proper temperature, the cream taken off before the milk changes, churning not delayed until the cream becomes bitter or its qualities impaired, performed without interruption, with temperature of the cream at about 60 degrees, a perfect separation of the buttermilk, salted with the purest of salt, (and one of the committee adds, worked with *wooden* or *marble* hands,) excluded from the air and kept at a low temperature. These general rules, observed with the neatness indispensable in the dairy, would decrease the quantity of poor butter, and add to the income of the dairy.

Were your committee to suggest that a judicious choice of cows, with change of pastures from week to week,—a constant and full supply of salt, to prevent its medicinal action,—pure water, always accessible,—kind treatment and systematic milking,—straining the milk immediately after churning,—cleanliness of every utensil,—with peculiar care of milk-house and buttery,

all tend to increase the quantity and quality of butter, it might appear that the committee were fearful that the farmers were about neglecting their own interest.

GEORGE DENNY, *Chairman.*

Mechanic Tools and Agricultural Implements.

The committee regret to report that an unusually small number of articles, which came under their jurisdiction, was presented for exhibition. They regret this the more, because they regard this department as an important one, and believe that it affords facilities for farmers and mechanics to obtain a knowledge of the various new and useful tools and implements which science and active invention are constantly supplying, that cannot generally be obtained in any other way. Printed or written descriptions of new contrivances and improvements, are mostly of trifling importance compared with an actual survey of the thing itself. The success attending the mechanics' exhibitions in Boston, New York, and various other places in our own country, which attract such immense throngs in some of the large European cities, is pretty good proof of this, and tends to verify the old adage, that "seeing is believing."

Messrs. Ruggles, Nourse & Mason contributed their usual quota towards the exhibition. Twenty-nine varieties of ploughs, a corn-sheller, a vegetable cutter, an improved harrow, and a well made road-scraper were sent in by them. It seems almost incredible that so many kinds of ploughs can be necessary for all soils and situations. But your committee do not hesitate to say, that, in their opinion, the peculiar and distinctive merits of each are visible upon trial and explanation. Many of the improvements upon the old-fashioned ploughs, which these gentlemen have introduced and adopted, are already so much in vogue, as to be known to all farmers; while others of later date have become known to only a portion of the agricultural interest. It seems to us that the farmer neglects his own real interest in neglecting to understand the peculiar utility of most of these improvements. An improved form of the mould-board, by which the soil is turned more easily and with less exertion to the hand

than formerly, commended itself to the attention of all. The draft rod upon ploughs of recent introduction, also those with meadow fixtures, used in reclaiming meadows, and capable of being removed, and the same plough used for upland ploughing, deserve particular notice. The chilled share and landside manufactured by them, are decided improvements over most ploughs now in use. A wheel at the forward end of the cultivator has been recently added by them, and greatly facilitates turning, regulates the depth, and steadies the movement of the implement. The handles of all their ploughs have been recently remodelled and improved. Their subsoil plough, made upon precisely the same principle as one imported by them from Scotland, in 1840, has been simplified in construction, and reduced in cost, from fifty dollars in Scotland, to fifteen dollars in Massachusetts, of corresponding size. For this they deserve the thanks of every farmer. Every real improvement in any agricultural implement, may be said, in one sense, to be an additional pair of hands, or at least, an extra brace of muscles to the farmer, which he gets without paying them extra wages. In this view, too much encouragement cannot be given to those who are seeking to improve and perfect every kind of implement which the husbandman employs. Messrs. R. N. & M. have for years exercised an indefatigable zeal and perseverance in this behalf, and have been rewarded with great success. Your committee recommend that a gratuity of ten dollars be given them, as a trifling though inadequate proof of the Society's appreciation of their indisputable skill and constant exertions to improve upon the past.

F. W. GALE, *Chairman.*

Root Crops.

The committee report, that there were only two entries for premiums on root crops, made in conformity to the rules of the Society, and both of these were for carrots; one by Orrin Fairbanks, of Westborough, and the other by D. Waldo Lincoln, of Worcester. The committee visited the several fields to which their attention was called, and also the carrot fields of Messrs.

Hammond and Wheeler. The land of Mr. Hammond was a strong deep soil; it was ploughed with a common plough; the crop was quite uneven, several trees being within the field, and the shade had had its influence on the growth of the root. Previous to the harvest being concluded, a portion of the ground was measured, which was selected as having on it the most abundant crop, and yielded at the rate of 883 1-2 measured bushels to the acre. The land of Mr. Lincoln bearing his carrot crop, had been subsoiled and cultivated as stated in the certificate of the owner; the 1-4 acre was taken from the best part of the field. Mr. Wheeler's land, on which the carrots were grown, was a light gravel soil, and the crop had evidently been injured by the severe drought of the season, and, as will appear from his statement, the crop was unequal over different parts of the field. He thinks, that in a common season, his crop would have exceeded 1000 bushels per acre. His course is believed to be unusual, to grow carrots on the same ground for three consecutive years, and his statement was requested, to show the progressive improvement of the land under this mode of cultivation. The thanks of the public should be accorded him for the information his statement affords; and it gives evidence that he has received the reward promised to the intelligent husbandman. The field was uncommonly clean from weeds, more so than is usually witnessed in a garden, and this in ground which was, within the recollection of some of the committee, a few years since, filled with the roots of the *couch* or *quitch* grass.

Two of the members of the committee then proceeded to view the land of George Denny, Esq., whose tenant, Mr. Fairbanks, had entered as a competitor for the premium for carrots. The land on which the carrots were grown, was, before his purchase, and this quite recently, a very wet meadow, yielding a growth of very little value. As food for neat stock, if the herbage was not so coarse as to require splitting as well as cutting, before it could be consumed, it is believed to have been more useful as a means of making manure than as food for cattle. It now promises to give abundant crops of the best of grass. The soil appeared to lay up very light; perhaps it had not become sufficiently consolidated to resist a drought. Should this be the

case, small gates can be placed in the ditches, so as occasionally to raise the water and moisten the lands between them. In addition to this, Mr. Denny has the command of water by which he can irrigate this reclaimed land, by which he would secure large crops from it; but, having other land over which this water may be used to great advantage, he may think it more advisable to stop the water in the ditches if he shall find it necessary. Other improvements have been made by him in fences, cultivation, and the erection of convenient buildings; but perhaps no one thing would more highly commend itself to the attention of a farmer, than his facility for saving and increasing manure. Having at command an unlimited supply of meadow mud, he most profitably mixes it, from time to time, with the dung from his stock in his capacious barn-cellar.

The committee recommend that the premium of eight dollars be paid to D. Waldo Lincoln, for his crop of carrots, it being the greatest quantity entered for competition; and to Orrin Fairbanks, the sum of five dollars for the next greatest quantity on one quarter of an acre of land. They regret there has been no applicant for either of the other premiums for root crops offered by the Society.

Mr. Denny's communication is hereunto appended, as containing valuable information to those having such meadows, which they may also improve.

JOHN W. LINCOLN, *Chairman.*

Statement of William A. Wheeler.

I herewith hand you a statement of the product of carrots upon one acre of ground on my farm, in Worcester, for the three years last past.

ONE ACRE OF LAND.

Dr.				*Cr.*
1843.	To 61 days labor, at 5*s.*,	$50 83	By 361 bushels carrots, 25*c.*,	$90 25
	" 6½ " 1 pr oxen, 5*s.*,	5 42		
	" 1 " 2 horses,	1 50		
	" Manure,	18 00		
	" Sowing seed,	3 00		
		$78 75		$90 25
1844.	To 77 days labor, at 5*s.*,	$24 17	By 710 bushels carrots, 25*c.*,	$177 50
	" 17½ " 1 pr oxen, 5*s.*,	14 58		
	" 12 cords manure,	36 00		
	" 3½ " compost,	10 50		
		125 25		177 50
1845.	To 79 days labor, at 5*s.* 6*d.*,	$72 42	By 736 bushels carrots, 25*c.*,	$184 00
	To 12 days, 1 pr oxen, 5*s.* 6*d.*,	11 00		
	To 2 days, man and team,	3 33		
	" 13 cords compost from yard, at $2 50,	32 50		
	To 4½ cords manure, at $3 50,	15 75	(206 bush. on ¼ acre.)	
		135 00		184 00

Statement of D. Waldo Lincoln.

My crop of carrots, entered for the Society's premium, was raised upon one fourth of an acre of land, by measurement, and the produce was 177½ bushels, of 56 pounds each, or at the rate of 710 bushels to the acre.

The land produced a crop of oats in the summer of 1843, and in the fall was laid down, according to what is called the new system of husbandry, but without a top dressing of manure. The seed did not come up well, and all that did, was utterly killed by the following winter, and the experiment was an entire failure. Finding, in the summer of 1844, that the grass was coming to nothing, the land was again ploughed, and sowed with buckwheat. In the spring of 1845, 33 loads of strong slaughter-house manure, and 20 loads of good stable manure, were spread upon 150 rods of land. It was then three times ploughed, twice with a common, and once with a subsoil plough. The seed was sowed the last week in May. The carrots were hoed the middle of June, and again the first week

in July, at which time the rows were hardly visible, and I was advised to plough them in and sow buckwheat. Nothing more was done to them till harvesting, when the quarter of an acre selected as the best on the field yielded 177½ bushels. The carrots were not thinned out as generally recommended, for the reasons that the process of thinning has been found about as tedious and expensive as weeding, and, also, because small carrots are more conveniently eaten by cattle, and the increased size, where they are thinned, does not compensate for the diminished number.

The soil is a deep yellow loam, resting probably on a ledge of slate stone, at a depth varying from 10 to 20 feet. Throughout the season, the carrots growing on that portion of the field, manured with stable manure, were better than those manured with the offal from the slaughter-house.

The following is the estimated cost of the crop:—

Interest upon the value of the land,	$3 00
Seed and cost of sowing,	1 00
Cost of manure, $17 50—one half to the crop,	8 75
Expense of drawing the same,	4 50
Three times ploughing,	1 50
Twice weeding,	3 00
Harvesting,	7 00
	$28 75

Value of the crop in the field, at $9 per ton, 177½ bushels, $40 25. Leaving a profit of $11 50.

It should be understood that I have selected the best part of the field, and that the whole would not have presented so favorable a result.

Worcester, Dec. 24th, 1845.

Statement of Orrin Fairbanks.

The crop of carrots which I have entered for the Society's premium, was grown on a piece of land measuring 68½ rods. The only crops taken from the ground, to my knowledge, were

taken the last year, and consisted of *large stumps and trunks of trees*, which must have been planted near a century. The ground is a peat meadow or swamp, was pared and burnt the preceding year, and part of it ploughed. June 13th, the ground was harrowed, and small pieces of wood removed from it; and it was sowed with a seed sower. August 2d, the first and only weeding; plants not thinned out. The whole crop was 181 bushels, at 56 pounds to the bushel.

Harrowing and removing small pieces of wood,	$2 00
Seed and sowing,	1 12
Manure, guano, 220 lbs., $4 95, one half to the crop,	2 48
Putting on the same,	13
Weeding three days,	3 00
Harvesting,	6 00
Topping,	4 00
Interest on land,	75
	$19 48

Value of Crop.

5 tons 136 lbs. of carrots, at $10 per ton,	$50 68
Leaving profit, after deducting expenses,	$31 20

Westboro', Nov., 1845.

Statement of George Denny.

The subject of reclaiming swamp or bog meadow should be so well understood at this time, as to make unnecessary, remarks from any one of the present generation. Dr. Jared Elliot, of Connecticut, an experienced farmer of the last century, gave an excellent account of his mode, which was published in 1747, and said, "the meadow was deemed so poor, none would take it up. I was pitied, as being about to waste a great deal of money, but they comforted themselves, that if I spent it unprofitably, others, that stood in need of it, would get it. They are now of another opinion. Some are deterred from such an undertaking as that of draining their land, by reason of the great charge. They terrify themselves without reason."

Such was the language of one, who, more than a hundred years since, was engaged in improving for profit those waste spots, now to be found neglected on many farms. You having referred to this neglect, and requested some account of the meadow on my farm, I make the attempt, not however without the feeling, that to properly understand the description of any improvement on wet lands, the *eye*, as well as the *ear*, should be called into service. About six years since, I commenced reclaiming, and reclaimed and have now in progress about 24 acres. An attempt has been made to do something with the upland and paring plough, also with an instrument like a harrow, substituting for the teeth, *plough-cutters*, and adding rollers, which on meadows, free from stumps, may be found useful. My meadow being liberally supplied with large stumps and trunks of trees *under* the bog, experience has led me to adopt the paring process with the bog hoe, as the most economical. It may seem superfluous to mention, that, previous to this, a process of thorough draining was gone through with, by open ditches. I have ploughed, pared, and burnt, adding gravel, pared and carted off the turf, pared and burnt, adding, or leaving nothing but the ashes, used the *harrow-like* instrument above referred to, taking off loose turf, and adding compost; in all cases seeding down to grass, pared and burnt, and taken off crops of rye, oats, corn, potatoes, and carrots. The mud will generally pay for ditching. Paring, burning and stumping have been done, the land being made ready for seed, for $25 per acre, from which should be deducted the value of wood *dug up*.

Mr. Elliot, before referred to, said, "Swamps that are full of wood and brush, and covered with moss, if they are deep soil and can be drained, will make good land for corn and grass." If experience, one hundred years since, would warrant this remark, we may be safe now, in saying that such lands "will make good land" for English grass, and amply remunerate the farmer for any expense incurred in reclaiming them. Mr. Phinney, who is good authority, thinks his reclaimed meadow worth more than $400 per acre for cultivation.

The average price of English hay may be stated at $10 per ton. If land thus renovated will produce two tons to the

acre, which is less than experience has shown,—deducting, say one third for the expense of harvesting, there will remain an amount equivalent to the interest of $200 per acre. Swamp meadows may be rendered productive, at an expense not exceeding that for reclaiming many of our uplands; to accomplish which,—1st. Drain perfectly, not omitting margin or border ditches. 2d. Pare as deep as the thickness of the sward. 3d. Burn the turf completely, reducing the whole to ashes, which may be done, if sufficiently dry, as spread, or be gathered into heaps, in which case care must be used that the fire does not take such hold of the ground as to injure it. 4th. Spread the ashes, plough shallow, which may be done with a horse, with shoes made for the purpose. 5th. If the time of year permit, commence cultivation with a root crop, after which, lay down to grass. Manure will do no damage. 6th. If from any cause the land cannot be pared, harrow the turf, add compost, and seed to grass; in which way good crops have been obtained. These hints apply more particularly to wet meadows, where it is necessary to employ mostly manual labor.

Westboro', Dec. 3, 1845.

HAMPSHIRE, HAMPDEN AND FRANKLIN AGRICULTURAL SOCIETY.

The Hampshire, Hampden and Franklin Agricultural Society held their twenty-eighth Cattle Show and Exhibition of Domestic Manufactures, at Northampton, the 15th and 16th of October last. The returns consist of the reports of committees, with the awards of premiums, unaccompanied, however, by any statements from successful competitors. From the reports the following selections are made.

On Domestic Manufactures.

The domestic arts are numerous, but not more so than they are valuable. That many men have become thrifty and independent, and that many more have been saved from bankruptcy by the wheels and needles of industrious wives and daughters, no one can doubt. The females of such families know nothing of lawyers, except by the hearing of the ear; and their knowledge of sheriffs, nothing but a passing one: for if they pass their way, they surely pass their doors. Count those acres of land well fenced and well cultivated, and those flocks now feeding on our thousand hills, purchased directly or indirectly by woman's labor, and you have facts of no ordinary interest to the political economist.

But the profits of the spinning-wheel, the distaff, the loom and the needle, are not all told in counting up, at the end of the year, the shillings and dollars earned and saved for the purchase of land with its flocks and herds. Fire-side industry has other and higher bearings. It affects the mental, social and moral condition of families. Time becomes valuable to us as we understand our relations, and resolve to live answerably to them, by a proper discharge of our appropriate duties. The idea that we have something to do, and that constantly, for ourselves and others, lies at the foundation of industrious habits. And in those persevering attempts to supply physical wants

merely, we are brought to see our own ignorance of the best modes of accomplishing this object; and thus we are led into new fields of thought and invention,—a process alike improving to the intellect and heart. Thus virtue in one sense may be called the offspring of physical labor, and that statement seems not to be overwrought, which makes the virtues of New England society to spring from the hard labor requisite to supply the physical wants of her inhabitants. The idea that this connection exists between free voluntary labor and virtue, is so generally received among intelligent men, that, to decide upon the social and moral condition of families in a free government like our own, they simply wish to know whether such families are industrious.

But of what practical utility is ornamental work, like much of that exhibited at our fairs, when plain articles will answer just as well? This question is often asked by practical men who visit the annual fairs. We reply, that the contemplation of beautiful objects is a source of moral improvement. Why is the physical universe full of beautiful objects, unless there was some valuable end to be answered? We could conceive of it existing without one lineament of beauty, and still meeting the wants of our physical natures. But no; all nature must have a gorgeous dress, from the lily of the valley to the rainbow which arches the heavens, that there may be suitable objects for the improvement of our moral natures. All the associations, too, connected with the beauties of nature, tend to elevate and purify the mind. And as is the character of the conceptions, so is their embodiment in external forms. Thus the products of virtuous industry are always in a greater or less degree beautiful. The external act so accords with the state of the moral feelings, that, when the former is in good taste, we infer the latter are correct. The traveller in the country, without knowing the inmates of the dwelling he is passing, sees a virtuous and happy family in the neat picket fence of the door-yard, the tasteful shrubbery, and the trellised woodbine, which arches the front door. But on the other hand, the deeds of vicious persons are uncouth, deformed, out of all taste. And if they are ever tidy in dress, or ever live in beautiful edifices, surrounded with

ornamental grounds, it arises from their knowledge of the connection of which we are speaking, and they would seem to be virtuous by exhibiting the garb of virtue. The virtuous family, whether in the crowded city, or in the wilds of a new settlement, in connection with supplying their physical wants, will gratify their moral feelings in the production of articles that are ornamental. But the vicious man, if uninfluenced by the virtuous about him, and especially if he be alone, will always live in filth and rags. Verily his heart and his external condition should, and they do correspond. The good taste, which we sometimes see in the productions of men of great genius, yet of corrupt morals, is too inconstant to mistake its origin. It is exhibited by such men only when their moral feelings are somewhat correct.

It is true, however, not all those who are equally virtuous spend the same time in rendering the products of their own hands beautiful. Indeed, it is not the duty of the poor to devote the same amount of time, even if they desire it, in ornamenting articles of dress for their own wardrobes, or in shaping and polishing into good taste the various implements manufactured by themselves for carrying on their own craft, as the individuals who have more money, and consequently more time, at their command. But as poverty gives way to competency, and competency to affluence, through personal labor, there will be an increasing desire in all virtuous minds, to have every thing in the house, in the shop, or on the farm, in good taste.

The products of the hands being appropriate expressions of the moral feelings, we may say then to the gentlemen, and especially to the ladies, who have so cheerfully labored to make the fair a beautiful one, you may study ornament in the productions of your hands, and at the same time be answering one of the noblest ends of your being.

It is too true, that we have, in our own community, some individuals, of various employments, who need salutary impressions from some source on this subject. We might specify some farmers, and those, too, who are abundantly able to have things in better taste, whose ploughs, carts, wagons and tools of various kinds; whose cattle, horses and harnesses are so poor, miserable

and ragged, that it is painful to see them in the highway, or even on the farm. To some mechanics, also, our remarks will apply equally well. And especially to those women whose personal apparel, the products of whose dairies, and every thing else usually made or fashioned by woman at home, are so miserable in their appearance.

But the number of such persons in our community is small, as the great number of beautiful as well as useful articles, exhibited at the fair, abundantly shows.

The specimens of broadcloth from the Northampton Woollen Company, fully met the expectations of the committee. Though from the same mill we have seen superb pieces, yet, we believe, two of the pieces this year are better than any ever before offered. Eighteen pieces of fancy vestings were also entered by the same company. The committee suppose them to be the first of the kind ever manufactured in the country. They will compare well with the finest imported.

The fancy cassimeres and cloakings, presented by Gilbert & Stevens, of Ware, were exceedingly good, and cannot be too highly praised. Also, pieces of dressed flannels, from the same firm, were uncommonly fine.

A large assortment of counterpanes were exhibited. There were twenty entries. For variety and beauty, the committee believe them to surpass those of any previous year. A splendid one was offered by Mrs. J. W. Curtis, of Hadley; and a very tasteful one of cotton, needle work, by Miss Miriam Pomeroy, of Northampton.

Fine specimens of sewing silk, fancy colors, by J. Conant & Co. and Edward Valentine, of Northampton; also twenty-five pounds of raw silk, raised and reeled by O. D. Paine. The cocoons offered by Dr. Stebbins were very fine. Some of them were thought by the committee to be of unusually large size.

A great assortment of agricultural implements, by Augustus Clarke, manufactured to order, all of them superior. Also, a plough of Prouty & Mears's manufacture, by Wm. Clark. One of its excellencies is in its having a self-sharpening point. We recommend it to the notice of farmers.

The edge tools presented by C. W. Hannum, of Norwich,

were of superior quality and finish. We trust that many of his axes, like the one exhibited, will find their way, through our mountain boys, into the sturdy oaks, which are to feed our fires the coming winter.

Very fine specimens of cap and letter paper were presented by Wm. Clark & Co. of Northampton. We doubt whether better paper is manufactured in the country than that from Mr. Clark's mill. We understand it to be his rule, not to let a better article go into the market than his own. Such a rule, carried out in any useful employment, always gives success. And a gentleman of Mr. Clark's habits, who has already done so much for agriculture, by his persevering, successful and valuable experiments, is pledge enough to the public, that he is not to be outdone in the manufacture of this article.

It was the unanimous opinion of the committee, that, for variety and beauty, the tables of needle-work, by the ladies of Hadley and Northampton, far surpassed all previous exhibitions of the kind at the hall of the society. They speak well for the industry, good taste, and, we may add, the correct moral feelings of those who designed and executed the articles.

E. M. WRIGHT, *Chairman.*

On Ploughing.

The committee attended the execution of the work in the midst of a large concourse, attracted by this useful and pleasing competition, which was enlivened and graced by the attendance of many of our fair fellow citizens. We consider it a fit subject of congratulation to them and to the age, that an improved taste and an advanced state of moral sentiment lead them to encourage, by their presence and animating smiles, a scene of emulation in the wielding of the *bread-maker*, instead of the *widow* and *orphan-maker*. We hail the fact as a bright harbinger of the day, when the promise, so propitious to the best hopes of our race, that "swords shall be beat into ploughshares," shall be fulfilled.

Recent improvements in the construction of the plough, and the increased attention and skill applied to its management, have

resulted in a degree of excellence in the primary operation of the husbandman, so uniform as to render discrimination on the present occasion perplexing and difficult. This consideration induced the committee to award a number of gratuities, in addition to the regular premiums.

The first premium, of $7, is awarded to plough No. 12 (Aaron Breck, Jr. of Northampton). The points of excellence, which arrested the individual attention of the members of the committee in this, and made their decision unanimous, were 1st, good and sufficient depth; 2d, evenness and friableness of the furrow slices; and 3d, neat, thorough and well-defined work at the land's ends and finishing furrow.

The number of ploughs entered for competition, was twenty-six.

D. L. CHILD, *Chairman.*

STOCK.

It has been justly and truly said, by a committee of agriculturalists in this State, that "a farming district may be judged of by its *working oxen*, as safely as by its corn fields, and its barns." We most heartily subscribe to this truth.

In making a general survey of the stock at this exhibition, your committee observed, first, that there was a greater display of working cattle than has been for many years before; second, that the general character and condition of these animals was far above the ordinary standard; third, that in the teams from Southampton and Goshen, there was a uniformity in appearance, form, and age, and a large number of well matched teams, which gave us the highest satisfaction. Fourth, of miscellaneous entries of cattle, the number was much smaller than we have been accustomed or could wish to see. We have this to remark, however, that the quality of these few deserves the highest commendation.

It has been made the special duty of the committee, to award premiums on trains of working cattle. In discharging this duty, and while surveying those noble specimens of the strong and laboring ox, submissive to his yoke, calm and composed in

his demeanor, resolute and firm in his step, bold, intelligent and amiable in his visage,—when we beheld twain after twain of those sturdy animals, marching up through our streets, with their slow and measured tread, obedient to the "haw" and "gee" of their drivers, as the soldier to the command of his officer,—we could not but reflect, that really there is the bone and muscle of our country. They deserve to rank among the yeomanry of the soil; and they are up *hither to report themselves* of their labors and achievements in the fields of the husbandman.

To the New England farmer, the ox is the *sine qua non* of husbandry. With the exception of interval lands formed by the deposits of our rivers and streams, the soil of our country is extremely hard, intractable, rocky and rugged. To the Pilgrim Fathers, it seemed a barren region, a desert tract, so lately redeemed from the dominion of the ocean, that it was scarcely fit for the cultivation or the habitation of civilized man. The ox was a pioneer with the Pilgrim in the first traces of civilization in the western world. What with the axe, the hoe, the spade and the pick-axe, could not be made to yield in this sturdy soil of an arid and stony tongue of land, now rejoicing in the name of New England, the rude "breaking-up" plough must supply. And what could impotent man do, to drive the iron share through the tough sward, to disturb the tenacious roots, to drag to light the hidden stone, and thus lay open the bosom of mother earth to the genial rays of the sun? It were a vain effort. The ox must become a co-laborer with man; his neck must be brought to the yoke, the yoke to the chain, the chain to the beam, and with a man "to hold," and a boy "to drive," the ridge and the range, the hill and the valley, are turned into furrows.

Patient of cold and of heat, enduring the rigor of winter and the fervor of summer, with an equanimity of temper and strength, which Providence has bestowed on no other dumb animal save the camel of the desert, he has been, in all times and in all climates, the most faithful and indispensable ally of man, in subduing and bringing under cultivation the ruggedness of the earth.

The ox is not swift on foot, but on the contrary, "slow and sure." It is this quality of his character which renders him peculiarly valuable to the New England farmer. His slowness of motion in comparison with the horse, has subjected him at times to some prejudice, and by those who are anxious to see every thing move by the force of steam, to a depreciation of his value. But we believe, generally, that the farmers of Massachusetts on this subject, have adopted the proverb illustrated in Æsop's fable of the "Tortoise and the Hare,"—"the greater haste, the less speed;" and indeed, it has been already laid down as an axiom by a committee of farmers of Massachusetts, men who best ought to know the value of this animal, that the interests of the farmer, for most purposes, are best promoted by substituting the ox for the horse, and this for the following reasons; he is fed with less expense, is more patient of labor, and is more valuable when his services are ended.

The objection to his speed deserves a little further notice. His proverbial slowness is probably more the result of his education and training, than of his nature. In New England, he is slow and sure, because he is trained to be so. The character of our soil will not admit of rapidity of motion in its cultivation, and this stern fact of nature the ox is taught, from the first time his neck is submitted to the yoke, to regard. But in other climates and other regions, he is made an animal of speed, and capable of performing long journeys, in less time and with far better endurance, than the horse, his rival. The long and tedious Santa Fe expeditions across the great American deserts, are performed almost exclusively by oxen. Over the ever verdant *pampas* of Buenos Ayres, ox teams are seen travelling at the rate of thirty miles a day, for a month together. On their journey from this city to Mendosa, a distance of 900 miles, they pass in caravans of thirty or forty together. They are unyoked at night, and seek their sustenance from the herbage of the plains. In India, the bullock is used both for the saddle and the coach. He is curried, clothed and attended, with as much solicitude, and much greater kindness, than we bestow on our best horses. His travelling pace is a trot, and he is reported, by those who have ridden him, to perform journeys of sixty suc-

cessive days, at the rate of thirty and forty miles a day. In England, they formerly had ox *races*, and it is said that some years ago an ox ran four miles over the course at Lewis, for a hundred guineas, at the rate of fifteen miles the hour!

With these facts before us, we must come to the conclusion that the ox is by nature not *so slow* after all; and whatever may be his reputation in this respect, we believe our New England farmers are so well satisfied with his utility and economy, that no argument would induce them to change the ox for the horse in the ordinary service of husbandry.

Another objection has been raised against the hero of this report;—"the ox does not accommodate himself as readily as the horse, to the warmer climates." To this objection, it need only be said, that his service is as valuable to the farmer in summer as in winter; that he endures alike the heat of India and the cold of Russia. For a long time, it was believed that the ox was the native of Europe, and that in the *Aurock*, running wild in the forests of Poland, his original type was to be found. But Baron Cuvier's researches in Comparative Anatomy have established the fact that the cow is a native of southern Asia; and he reasons from this fact, that there is nothing in the constitution of the ox, which forbids his manifesting his entire capabilities in southern climes. Add to this the testimony of ancient history, that not only in Greece and Italy, but also throughout Asia, the ox and the plough are associated. At this day in the warm parts of India and China, the ox, and not the horse, are in the draught service. In Hindostan, the ox always appears even in the train of armies. In Spain, the cattle appear in no way inferior to those of the same species in America; and on the coast of the Mediterranean, there is a race of white cattle, at Naples, which are said not only to be as spirited and quick as the horse, but also to endure the heat much better. They are generally fifteen hands high; their bodies long, thin, and deep; legs long; head small and light; color entirely white; and in the yoke or harness, travel twenty-five or thirty miles a day. If we add upon the testimony of Chancellor Bland, one of the commissioners to South America, whose report Mr. Adams pronounced one of the ablest State papers ever

presented to the government, that "the ox in that region reaches his highest development of size and power," we shall need say nothing more in defence of his capacity to endure all the intensity of heat in tropical climes.

There were three trains of oxen entered for the premiums. The train from Hadley was the largest, and comprised fifty pairs. The train from Goshen numbered twenty-two pairs; that from Southampton numbered twenty pairs. There were ten other yoke of fine oxen from different towns. These in all make one hundred and two pairs, or two hundred and four oxen.

In awarding premiums upon these trains, the committee were at some loss to determine which to prefer as best answering to the conditions of the reward. There could be no doubt, however, that in the train from Hadley, numbering almost as many as both the others, twenty pairs could be selected which should be superior, in appearance and working condition, to an equal number selected from either of the other trains. Considering also the large number from Hadley (what your committee are required to consider) they could not hesitate to award the first premium to the train from Hadley.

Upon the farmers of Goshen and Southampton, your committee wish to bestow the highest commendation for their zeal in contributing to this exhibition. The quality and condition of the two trains of cattle from those places, their uniformity of size, similarity in age, nearly all being four years old, and their general smooth and working habits, do great credit to their owners.

There were nine bulls entered, three of which deserved special notice. One is full Durham breed, and owned by H. K. Starkweather, of Northampton. His mother was brought from England, and this specimen was her first born. He was the largest of his kind upon the ground. His age was three years; his weight, 2,010 lbs. The next specimen which we wish to notice was owned by Oliver E. Smith, of Hadley, three years old, and weighed 1,700 lbs. His breed is three quarters Durham, mixed with native blood. The third specimen is owned by H. A. Bridgman, of Belchertown. He is a Durham, three

years old, and weighs 1,800 lbs. Of the others, most were native breed, and though of fine quality, we are obliged to pass them without any particular notice.

Among the miscellaneous stock, we observed a very small number of very fine milch cows, both of Durham and native breed; a single steer, three years old, "the very king of his tribe," a splendid Durham, and owned by Alonzo Lamb, of South Hadley; a beautiful pair of twins, four years old, owned by Samuel Tinker, of Chesterfield; and a pair of working oxen, six years old, owned by Samuel Billings, of Hatfield. To these the first premiums on single yokes of working cattle have been awarded. A very few yearling heifers, one of which, owned by Paoli Lathrop, of South Hadley, is a thorough bred Durham, and one of the finest specimens your committee has ever had the pleasure to observe. This gentleman also entered three other heifers of the same breed, two years old; also a beautiful pair of twin steers, three years old, and true blooded "Native Americans." All these specimens were of the first order, and show to what perfection the raising of stock may be carried, when under the management of an intelligent and enterprising farmer.

The committee to award premiums on single pairs of cattle, and other miscellaneous stock, have suggested to us, and wish us to state, that they have found the exhibition this year much superior to any preceding year; and they would have been glad to confer many more premiums than they have, if the means of the Society had permitted.

The committee have only to suggest further, that the exhibition of *young stock*, although by no means inferior in quality to that offered in former years, was much smaller than they have been accustomed to see; and they indulge the hope, and would urge the importance of not permitting such a deficiency to appear in any future exhibitions. They deem young stock the best criterion by which to judge of the advance and improvement in this department of agriculture.

W. O. GORHAM, *Chairman.*

On Horses.

The committee are gratified in being able to report, that *as a whole*, taking into account the number and excellence of the animals presented, the show will compare quite favorably with that of any other year within their recollection. We are gratified at this fact, especially as it indicates an increasing interest in this noble animal, and these agricultural festivals, by the remaining part of the old county of Hampshire, which does not appear to be checked, even by the withdrawal of her vigorous daughter, Hampden, which has recently established, we rejoice to say, so successfully, agricultural fairs for herself.

The numbers exhibited, as well as the necessarily short time which could be devoted to the preparation of the report on this last day of the show,—the exhibition continuing up to the hour appointed for entering the church,—will prevent the committee from taking special notice, in this report, of the peculiar excellencies or defects of particular animals.

The horses examined are divided into five classes, in accordance with the regulations of the Society, in offering their premiums, viz.:—

Studs; pairs of horses for labor; geldings; breeding mares; and colts.

The number of studs entered for premium was four. For this class of horses, the Society offer three premiums. As a general remark, the committee are of opinion that those presented are not of extraordinary excellence; and they would take this opportunity to invite their fellow citizens to give more attention to this important class of horses.

Seven pairs of horses for labor were presented for the Society's premiums, and an exhibit was made of the training of each. This division of the show was good. Several pairs were exhibited of rare excellence, both as to appearance and training.

The number of geldings examined was seventeen, which is an unusually large number, and several of them were very superior animals.

For breeding mares with a specimen of her stock by her side,

two premiums were offered by the Society. The number of competitors was twelve. But although the number was large, and although there were a few specimens of good breeding mares, still the committee believe that in regard to a greater part of them, neither the mare nor the stock was very superior. They would therefore also invite greater attention to this class of horses, within the limits of the Society.

Eight colts three years old were shown, several of which were beautiful animals, well built, a good movement, and give promise of future efficient service. Indeed, your committee are of opinion that the rising generation of horses, as shown here to-day, bid very fair to eclipse their ancestors.

Of colts two years old there were four entries, and two of colts one year old.

In behalf of the Committee,

S. NASH.

HAMPDEN COUNTY AGRICULTURAL SOCIETY.

In the return of their doings, the directors of this society state, that "early in the season, extensive notice was given that the fair and cattle show, and exhibition of manufactures, would take place in the month of October. The fair was held on the 8th and 9th of October, and was in the highest degree creditable to the agricultural and mechanical and manufacturing interests of the county; and exceeded the expectations of the officers of the society. Some of the reports of committees are full, and in compliance with the requisitions of the society; others are more summary. This has arisen from the want of time, and also from the lack of experience, our society being now only in its second year. On account of a violent storm of rain during the whole of the second day of the fair, it became impracticable to examine the horses presented for exhibition, so as to do justice in the awarding of premiums, and the committees accordingly reported that they were unable to adjudge any. The number of horses was very large, and great disappointment was expressed at the result now stated, which, however, could not be avoided. Premiums on farms, produce and the general management of farms, are to be awarded previous to our annual meeting in February; and this arrangement is deemed for us the most practicable. The opinion of the county has established the character of this society for usefulness; and the directors look forward to its continued progress in advancing the best interests of this community."

Milch Cows.

The number of milch cows entered for premium was quite small: of which four only are entitled to consideration for premiums, in consequence of a failure to comply with the published rules of the Society.

1st premium,	George W. Sizer,	. . . . .	$6
2d "	Carlton Thayer,	. . . . .	5
3d "	Josiah C. Brownell,	. . . . .	4

4th premium, Miner Hitchcock, ... $3
All of Springfield.

The character of the above cows as producers, your committee think to be of a very high order.

George W. Sizer states that his cow, during seven days in June, produced 426 lbs. of milk, averaging 61 lbs. per day; highest number of pounds in a day 66 3-4. Keeping, hay and grass, with one quart of bran per day.

Carlton Thayer states the produce of his cow to be 63 lbs. of milk per day, from the 10th to the 20th of June, and from the 10th to the 20th of September, 45 lbs. per day. Keeping, not stated.

Josiah O. Brownell states, that his cow produced, from May to the 20th of June, 60 lbs. per day; and from the 20th of August to the 20th of September, 40 lbs. per day. Keeping, hay and grass alone.

Miner Hitchcock states, that his cow, during the month of June, produced 55 lbs. of milk per day, on grass alone; and that from the 10th to the 21st of September, her produce was 17 1-4 lbs. of butter. The weight of her milk on the morning of the 5th inst. was 20 lbs.

Other cows were presented of a very high character as producers,* among which was one presented by Dr. W. H. Cleveland, of Springfield. He states that he has sold milk from his cow since the 1st of June, 1844, a period of sixteen months, to the amount of $234 55.

CHAUNCY CAPIN, *Chairman.*

Fruits and Vegetables.

The potato, which, it was feared, had suffered much from severe drought, seems to have yielded a fair return, falling not much below the usual average, either in quality or quantity. That esculent claims especial consideration, and is, without doubt, the most interesting and important article in the whole catalogue of agricultural productions. It is, emphatically, the

* Of these, special notice should be taken of a noble animal (Durham), recently brought into the county by Hon. John Howard, of Springfield, some account of which the directors hope to obtain for publication hereafter.

poor man's bread and the rich man's luxury. Nutritious, palatable and cheap, it seems to have been adapted by a kind Providence as a sufficient resort in all climates and regions of the habitable globe, in comparison with which all other bread-stuffs are but *fancy brands*. We say *bread-stuffs*, because it is well ascertained that the farina or flour of potatoes is the best produced from any plant, and is used in larger quantities by the bakers in Paris, where the superiority of the bread and pastry, over any other European city, has long been proverbial.

It is therefore important that all the varieties, habits, and modes of culture of this esculent, and the diseases to which it is liable, should be well studied and carefully noted. That there yet remains much to be learned in relation to its character and mode of cultivation, is evident from the fact, that it occasionally yields a crop of six or seven hundred bushels to the acre, whilst the average is much less than half that quantity. We should never forget that what has been done can be done again, and although the season has much to do with it, still, if a large yield has once been had, it is safe to calculate that the same soil, seed and tilth will produce the like again. But in order that we may have the results to any extent under our own control, the science of agriculture, in all its hidden recesses and wonderful mysteries, needs to be explored. To stimulate and promote these inquiries, nothing has ever done more than the establishment of agricultural societies.

Up to this time, the disease of the potato, which has prevailed so extensively of late, has baffled all human discernment. All sorts of conjectures are afloat, but, verily, nothing more. One learned writer, however, has come to the conclusion, that it is owing to a parasite fungus or mushroom striking its roots into the fruit; and a sensible farmer of our own county is quite sure that it is because there has not been sufficient thunder and lightning to purify the air. Your committee, at present, feel disposed to impute it to *ill health* in that vegetable, and recommend smart treatment and thorough experiments to find out the remedy. Let the seed be brought from healthy regions, and never suffered to lie in such masses and in such situations, as to take on the least degree of fermentation.

As to the Pomological or Orchard Fruits, the committee remark, that they regard their cultivation of great importance, not only as ministering to the most innocent gratification, but also in reference to their influence upon the moral as well as physical health of the people. That the free use of choice and well ripened fruit does most eminently promote physical health in the warm season, is now perfectly well attested; and we believe it to be no less certain that the great cause of temperance is most essentially aided by the furnishing of such an agreeable substitute for wines and other similar beverages. There are many cultivators in this vicinity who have attempted much, and achieved a great deal, in the way of introducing new and improved varieties of the Peach, Pear, and Plum. The choicest specimens of French and Flemish Pears are becoming quite common, and the best kinds of Grapes, both foreign and native, are found in almost every garden.

For the committee,

D. M. BRYANT.

Mechanical Productions.

The committee, S. Sanborn, chairman, say that the mechanical ingenuity and industry of the county is amply sufficient, if brought out, to make this a leading and attractive feature in our annual exhibitions.

The following articles were carefully examined by the committee :—

Model of Bridge, Draw, and improved Truss for Bridge, by Isaac Damon, of Northampton. The principal novel feature in this bridge, and a very important one, is the *inverted arch*, which is intended to strengthen the top chord over the piers and the lower chord midway between them,—two points which have been found to fail in wood bridges heretofore constructed. In combination with the usual arch, it also prevents perpendicular vibration. In the arrangement and proportion of the timbers, the patentee has shown good judgment and a thorough knowledge of the subject. The committee are united in recommend-

ing this bridge to the favor of the public, and would feel warranted in awarding a premium, did the rules of the Society allow them to go beyond the limits of the county.

The *Draw*, which makes a part of the model, is an excellent contrivance, the motion of the weights being graduated in such a manner as to equalize the resistance upon the crank in raising or lowering the bridge. The *Truss* is, also, thought worthy of special notice. The improvement consists in the counter braces, which are locked into the upper and lower chords, and are thus made to answer the purpose of the inverted arch in the bridge model.

A store lock, by N. Bacon, Springfield, a recent invention, and much safer than the ordinary store lock. Premium $2.

Improved combination bank lock, by S. Merrick, Springfield. The improvement consists in a self-acting cam lever, which prevents the bolt from pressing upon the latches until the particular change in the combination is found, and which is entirely inaccessible from the key-hole; also the *cam* bits of the key, which double the combination number. The committee can discover no principle by which the lock can be picked. Premium $4.

Specimens of swords, military equipments, cutlery, carbines, and pistols, by N. P. Ames, of Cabotville, attracted universal admiration for their beautiful design and finish. The plating is effected by the galvanic process, which Mr. Ames has succeeded in bringing to a high degree of perfection. Premium $6.

Case of gold and silver thimbles and spectacles, by Dimon Chandler, of Longmeadow. These articles are excellent both in design and workmanship, and surpass any thing of the kind known to the committee, either of foreign or domestic manufacture. Premium $5.

In laying the following communications before the public, the directors call attention to the importance of diffusing as largely as possible through the county, a knowledge of valuable results, which may be arrived at in the cultivation of the soil. The exhibition of products is important, but the means of obtaining them is more important. We ask therefore of the farmers, that they take whatever pains may be necessary to spread before the

community, through the Society, the process and results of all successful examples of cultivation, and in every branch of agricultural economy. Wherever there is a valuable cow, an uncommon producer, let the mode of raising, feeding and managing be communicated to this Society, for the public eye. And, so, too, wherever there are cattle possessing more than ordinary qualities, whether for labor or for the stall, let the modes of bringing up and carrying forward be made known.

Statement of D. M. Bryant.

In the fall of 1844, I purchased seven and a half acres of land, at nine dollars per acre, the land situated upon the county road leading from Chicopee Falls to Granby, about two miles from the river. It is situated on the east side of Ridge Hill, and bounded west by a heavy growth of pine timber. The land had been sown to rye three times, and the last crop might have been ten or twelve bushels per acre. My object in purchasing it, was to demonstrate that the pine plains, properly manured and cultivated, would yield a fair profit; but the result of this experiment has far exceeded my anticipations.

The whole piece was ploughed in September, and the land left in the furrow during the winter; one acre measured off for potatoes, ploughed deep, and twelve loads of compost, made as described in note A, spread upon the furrow, harrowed and brushed in; the rows marked with a chain three and a half feet apart, potatoes dropped, single, two feet apart, and plastered, covered with the plough, hoed once, and one bushel of plaster sowed broad-cast after. This crop would have been benefited by another hoeing.

Three and a half acres were planted with corn; compost above mentioned was spread in same manner as upon the potatoes, to the extent of two acres, including the squashes below mentioned. The seed soaked in a solution of sal ammoniac and saltpetre. The corn came up very even, and was cut down twice by frost. The moles destroyed many hills, but the crows, after tasting it, found it unpalatable. Ninety pounds of guano, mixed with four bushels of decomposed clay slate, were drop-

ped upon the hill after the first hoeing, and 100 lbs. of guano, mixed with six bushels of leached ashes, applied in the same manner after the second hoeing; more was used at the third time. The corn was dwarfish in appearance; many of the stalks not exceeding three feet in length, but with two good ears on them. On that part dressed with compost, the yield was very superior.

A part, intended for 2 acres, was ploughed in April, and 190 lbs. guano, mixed with 10 bushels of ashes, spread broad-cast upon the furrow, harrowed, clover seed sown and brushed in, oats drilled in at 12 inches. One extra cast was made with the guano across the piece; the oats and clover on this part were very large, and the green color was more intense than on any other part of the field, thus proving that I used but half the quantity of guano requisite. The oats had no rain upon them until about three weeks after they were drilled; the consequence was, a great part of the seed did not vegetate until four weeks after they first made their appearance. A large part of this plat lay upon a very poor side hill, crowned with high pines, and upon the borders nothing could grow. Half an acre, as supposed, but which proved, on measurement, to contain but 65 rods, was laid out for carrots, ploughed with the corn land. A compost of 6 barrels of poudrette (see Note B), 5 bushels of soot mixed with old tan and leaves (the contents of an old hot-bed), measuring less than $\frac{3}{4}$ of a cord, were ploughed in very deep the last week in May, harrowed and brushed. One third of a pound of carrot seed, prepared like the seed corn, was drilled in by rows 12 inches by 24 inches, hoed three times and thinned at the same time. By sowing in this manner, we can use the cultivator between every pair of rows.

An acute angle of the piece, called one quarter of an acre, was ploughed in July, and 2 bbls. of poudrette, $1\frac{1}{2}$ bushels of salt, and 32 lbs. of guano and of proof harrowed in. Turnip seed were drilled in the 26th July; although the weather was unusually dry, most of the seed came up immediately and grew finely. I sold from the piece $2\frac{1}{2}$ bushels of turnips, on the 15th September, and $3\frac{1}{2}$ bushels on the 22d September. On this piece I set out turnips and beets in the spring for seed, the beets did not vegetate, and the turnips yielded no seed.

About half of an acre was very indifferently planted with white beans, and then had a share of the guano charged to the corn. The beans, both while growing and when ripe, were the finest I ever saw.

Two small squares upon the side hill, and surrounded by corn, were planted with crook-neck and autumnal marrow squashes, manured in the hill with poudrette. The latter were a fine crop, the crook-necks were small. Five hills of the squashes were manured in the hill with stable manure. The plants came up well and looked well until the drought came on, and the 1st of August there was not a green leaf upon them; fortunately this was my only experiment with stable manure upon this land.

Cost of land, 7½ acres, at $9	$ 67 50
Cost of labor and manure, ...	116 77
	$184 27

Product.

3¼	acres	corn, 176 bush. (ears), 88 bush. 75 cts.	$66 00	
		Corn-stalks sold for	11 38	
2	acres	oats, 30 bush. 42 cts. . . .	12 60	
¼	"	beans, 2¼ bush. $1 50 . . .	3 37	
½	"	carrots, 190 bush. (5 tons 14 cwt.) 20 cts.	38 00	
1	"	potatoes, "Carter," 139 bush. 50 cts.	69 50	
¼	"	turnips, 80 bush. 20 cts. . . .	16 00	
¼	"	squashes, ...	2 00	
				218 85
7½	"			
		Balance of income, . .		$34 58

Chicopee Falls, Oct. 1845.

Note A.—Compost consisted of 10 loads of peat, carting on the lot, say 3 miles from the place where it was dug, at 62½ cts. per load, ... $ 6 25
135 bush. leached ashes, at 6 cts., drawing 4 cts. . 13 50
40 bush. shell lime, ... 8 00
1¼ cords chip dirt and drawing, ... 2 50
6 hhds. refuse liquor from paper mill, . . . 3 00

Making 38 loads, cost $33 25

Note B.—Poudrette made by filling a hhd. or bbl. with dry peat, adding old fish brine and unleached ashes, and saturating with human urine. After the bbl. is saturated, it is headed up and kept for use. I consider this as the *cheapest* and best manure ever used, and suited to all kinds of soil. I have never found it detrimental when used in large quantities.

Statement of Daniel Merrick.

I hereby present some account of my crop of wheat the present year. My whole crop was 256 bushels. I had one acre on which there had been no manure for more than 30 years, and it had been tilled every year. Until about five or six years ago it was rye and corn, year by year, in succession, and a crop taken every year. Two years ago last spring, I sowed it with clover seed upon the rye, for the first time within the time above named. Then last summer one year, the last of June, I mowed and took off the first crop of clover; then let the second crop grow until the last part of September, when I ploughed it under and sowed it with wheat. This July, I gathered the harvest, and, as near as I can calculate, there were 25 or 26 bushels on this acre. The whole number of acres that I had of wheat, was nine. Four produced 30 bushels each per acre, four about 28 bushels each, and the other acre, above described, about 25 bushels.

West Springfield, Dec. 1, 1845.

Statement of Benjamin Willard.

I offer the following statement of the manner in which I have kept 4 cows, 4 yearlings, 30 sheep and a horse, five months, from Dec. 1, 1844. By measurement of the hay on my scaffold, I estimated it equal to 7 tons, and the straw of one acre of rye, and the fodder of $\frac{1}{2}$ acre of corn, and 400 bushels English turnips. My question was, what amount of grain will be required in addition, to carry them all through? After making a careful estimate, I came to the following result: that I should need 100

bushels, to be used in kind and quantity most economically, thus:—For sheep, 2 gills each, corn and broom seed mixed, every other day, and the alternate day ½ bushel cut turnips, equal to 10 bushels corn and 10 bushels broom seed. Horse and cattle, cut straw or hay and meal daily, say morning, and turnips at night, given to them whole, in their cribs. My provender for them was ⅛ rye, ⅜ corn, ½ broom seed. Of this, 4 quarts to the horse, 4 to the yearlings, 8 to the cows, each; equal to 10 bushels rye, 30 bushels corn, 40 bushels broom seed. In all, 100 bushels for horse, cattle and sheep.

I gave less grain the fore part of the season, and more the latter part, and fed hay once at noon and once at night, proportioned to the time and amount I had to feed, as I judged, being sure not to exceed. In April, I sold one ton, and had one ton left at May 1st. All my stock was healthful; one cow weighed 1280 lbs. ten days before calving. I pitched my hay from the top, keeping it always covered with straw and wet with brine. The stock eat and drank heartily and wasted nothing.

The following is the cost of the articles of food used for the animals during the above time:—

5 tons hay at $12	$60
50 bush. broom seed, at 25 cts., say	13
10 " rye and 40 do. corn, at 67 cts.	34
400 " E. turnips, at 16 cts.	64
Corn fodder and straw, ...	9
	$180

I used 60 bushels coal dust, one ton plaster, and litter spread daily in stables; manure under shelter. The straw with the stale absorbed, would not be worth less than $40. A farrow cow gave daily 9 quarts milk; the others held out finely. Three calves, from a full blood Durham, $20 each this autumn. Sheep, wool and lambs, $60. Yearlings came out fat,—increased value, $20. Horse earned his keeping. I sold a colt, at 4 months old, for $25.

Ireland, Oct. 8, 1845.

BERKSHIRE AGRICULTURAL SOCIETY.

This Society held its thirty-fifth anniversary on the 1st and 2d days of October, 1845.

The first day of the Fair was devoted to the exhibition of animals, domestic manufactures, and agricultural implements. The ploughing match, on the morning of the second day, excited great interest. At eleven o'clock, the Society moved in procession to the Congregational Church, where the annual address was delivered by the President of the Society, Hon. Asahel Foote, of Williamstown. The reading of the reports of the various committees then followed, and the premiums of the Society were distributed by the treasurer, assisted by the marshals, to the successful competitors.

The following selections are made from the reports.

Agricultural Products.

It gave the committee great pleasure to notice the spirit among many of the farmers, to reclaim and improve their lands, their fences and their barns, and make comfortable their tenements, displaying neatness and taste in the arrangement about their houses and yards, with good front fences, with fruit trees and vines, and shade trees, good kitchen gardens and flower plats, emblems of neatness and taste, and a sure indication of well arranged apartments within.

The committee were highly gratified in discovering an interest among many of the farmers to cultivate the wheat crop. Almost every farmer has some land well adapted, with proper culture, to the raising of this important crop. When we consider the large amount of wheat imported into this county from the west, and the great draft that is thus made upon the means of the farmer, while the products of our own land are so depressed, is it not time to awake to the subject of wheat growing? Your committee are of opinion that it can be cultivated with success, from what they have been able to discover in their

round of duty. Seven pieces of winter, and thirteen of spring wheat were entered for premium, nearly all a good growth, well filled, and very little injured by the insect that has formerly made such ravages in spring wheat. The winter wheat was apparently perfect, and as handsome as the wheat fields of the west. We would recommend the cultivation of this crop. We believe the secret of success is in selecting the right soil, and preparing it for the seed; a warm, quick soil is the best; summer ploughing and fall cross-ploughing, top-dressing, with fine manure, early sowing and heavy seeding (at least two bushels to the acre), is the true method to pursue. Spring wheat should be sown on similar soil, and early, with heavy seeding. We award the first premium on the best acre of winter wheat, to

Loomis Millard, of Egremont, ...	$6 00
2d premium to John L. Cooper, of Sheffield, . .	5 00
3d " to Sloan Powell, of Lanesborough, .	4 00
4th " to Frederick Jones, of Stockbridge, .	3 00

Mr. Millard's piece contained about five acres, very heavy growth, and well filled and clean; and we judged would yield 30 bushels to the acre. Manner of culture, summer ploughing, cross-ploughing, light top-dressing, with fine manure; sowed 1st September, two bushels to the acre.

Eight pieces of winter rye were exhibited, all a great growth; but several pieces were badly filled, owing, as many suppose, to the late frosts in the spring, but more probably to the drought. The culture of this crop should be like that of wheat, early sowing and heavy seeding.

Five crops of meslins were offered. On rich ground, they are a good and valuable crop. The English meslins are wheat and rye for bread stuffs, which grow together harmoniously, and amalgamation need not be feared.

Some of our best farmers consider barley one of the most valuable crops for provender, and *the* best for stocking land. We viewed five pieces, which would yield from 40 to 60 bushels to the acre.

Twenty-eight pieces of corn and fourteen of potatoes were entered for premium. Almost every man has a way of his own

for planting corn. We have been particular in noticing the number of hills to the rod, and the quantity each rod produced, intending to select an average of each piece. Below, we give a table showing this, that all may judge for themselves as to the best distances at which to plant corn or potatoes. Our convictions are, that 34 or 36 hills to the rod, are about the right number.

The crop of potatoes throughout the county we consider full an average yield. There were not as many as usual planted, for fear they would again be affected by the rot. We are gratified to say, that we did not find any pieces in the south and interior parts of the county affected. In the north part, we found and learned of several pieces; one, on a reclaimed low meadow, was very badly affected. The land was rather wet, and this was the case wherever we found the potatoes affected on higher land. Last year they were affected on all kinds of soil. The cause and remedy of this very great calamity, many have attempted to explain, but not to the full satisfaction of the public. If ever ascertained, it will be by strict observation.

TABLE OF POTATOES.

Showing the number of hills on the rod, and quantity, and by whom raised.

		QUANTITY.	
	No. of Hills.	*Bush.*	*Qts.*
Walter Richards, Lenox, . . .	36	2	00
George Butler, " . . .	35	1	08
Samuel Goodrich, Stockbridge, . .	50	3	00
Joshua Lawton, Great Barrington, .	29	1	07
Henry Colt, Pittsfield, . . .	44	2	00
Levi Bradford, Lanesborough, . .	40	2	16
Joshua S. Tillotson, " . .	44	2	24
Asahel Sherman, " . .	44	3	06
Clement Harrison, Adams, . .	36	2	08
Caleb Brown, Williamstown, . .	44	2	03
Thomas B. Strong, Pittsfield, . .	00	1	08

TABLE OF INDIAN CORN.

Showing the number of hills on a rod, and quantity, and by whom raised.

	No. of Hills.	QUANTITY. Bush.	Qts.
Levi Butler, Lenox,	32	1	06
George Butler, "	31	1	09
Jay Curtis, Stockbridge,	40	1	01
Enos Olmsted, "	50	1	06
Edson Sexton, "	45	1	10
Mrs. Cornelia Ashburner, Stockbridge,	24	1	06
D. F. Goodrich, "	30	1	16
Charles Hinckley, Lee,	31	1	08
Leonard Tuttle, Sheffield,	29	1	14
Ralph Little, "	37	1	17
H. W. Bishop, Richmond,	30	1	15
Elias J. Werden, "	25	0	29
Nathan Chapin, "	36	1	12
Henry Colt, Pittsfield,	33	1	12
Curtis Tillotson, Lanesborough,	35	1	16
John R. Tillotson, "	42	1	17
Henry Tyler, Cheshire,	42	1	18
Clement Harrison, Adams,	31	1	22
Caleb Brown, Williamstown,	38	1	17
Andrew Beers, "	36	1	19

The committee examined two pieces of land reclaimed since the last annual fair. One piece, by Samuel Goodrich, of Stockbridge, consisted of one acre. It was swamp wet land, covered with bogs, stumps and hard hacks. There were 22 rods under

drain ditch, cost,	$8 80
Cutting brush, turfing and burning,	12 00
Ploughing and harrowing, &c.,	5 36
	$26 16
By 275 bushels of ashes, at 4 cents,	11 00
Leaving a balance of	$15 16

The value of this land before reclaimed, was mere nothing; now it is ready for planting or sowing, and is worth at least $75 per acre.

The other piece examined belonged to Benj. F. Hale, of Pittsfield, containing one acre. It was a black ash swamp, many large trees, and was cut over last winter. It was astonishing to learn at what small expense stumps could be dug up and burned, the land turfed and made level, and sowed to clover. The whole expense was $40; the land is now worth $100 per acre.

We award the premiums offered for making the greatest improvements to B. F. Hale, ... $5
An extra premium to S. Goodrich, ... 4

Two houses of honey bees were introduced for our inspection belonging to D. F. Goodrich, of Stockbridge, and Dan Bradley, of Lanesborough. Both were worthy of great praise. Mr. G.'s house was built with one roof, facing the east, for the benefit of the morning sun, and of sufficient height to admit two shelves, one above the other. On these shelves were placed the hives, simple in construction, eighteen inches deep, and of various sizes, with small boxes placed on the top of the hives, where the honey is deposited and removed. Mr. B.'s house was built with two roofs, standing north and south, one side receiving the morning sun, the other the afternoon, the bees working on both sides. He uses the patent hives. That bees will flourish for a while in a tree of the woods, or a straw hive under an apple-tree, there is no doubt. That our soil produced good grass and grain when the old wooden plough was in use, there is no doubt. When the farmers used the wooden plough, bees took wings and flew away. When it required two yoke of oxen and a horse to *speed* the plough, it required tin pans, dinner horns and sleigh bells to stop the speed of bees. When farmers made large hills around their corn, bees were killed to get their honey. But such is now the improvement in the management of bees, they are willing to give up part of their income, packed away in little boxes of the choicest kind, as a reward for a neat home and a kind friend.

We award to D. F. Goodrich, the premium offered for the best managed house of honey bees, ... $5
To Dan Bradley, an extra premium for second best, . 3

JUSTUS TOWER, *Chairman.*

Herds Grass Seed.

Several lots were offered for premium, all of which, say the committee (William Bacon, *Chairman*), were of better quality than is usually obtained in market. Although there were but two premiums offered on this article, we are fully confident that no applicant will regret the pains he has taken to provide from his own farm, and by his own labor, any quantity of grass seed he has so secured. The importance of thorough and liberal stocking is becoming more appreciated by the agricultural community, and there is no more reason for the farmer's procuring his grass seed from some distant part of the country every year, and thereby sending off more than his loose change, than there would be for his buying his seed oats or his seed rye every sowing.

Ploughing Match.

In their remarks in the Show Bill, the officers of the Society state, that "the first ploughing match, in Berkshire, was at the Show in 1818. There were only two premiums offered, and but four competitors, three of whom belonged to Pittsfield. Of the ploughs used, one only was of cast iron. At the present day, a wooden mould-board plough is very rarely to be seen. This fact alone demonstrates, in the clearest possible manner, the incalculable advantages the public derive from Agricultural Societies."

In their report the committee say, "The annual work of the plough must be performed, or men must famish and die. All associations for the promotion of agriculture have made the first and continued objects of their encouragement, the improvements in the form and skill in the use of the plough. So we find that, among our annual exhibitions, that which has attract-

ed the greatest attention, and called together by far the largest assemblies ever witnessed in this county, has been our ploughing match. For more than a quarter of a century, this interest on the part of men and women, old and young, has been unabated and increasing. We go forth into the fields, in the clear autumnal morning, surrounded by our families and friends, to exchange mutual greetings, to enjoy the moderate and rational excitement of the manly and generous contest, and to be reminded that, by patient and cheerful industry alone, can the earth be made to contribute to our sustenance and comfort.

At the earlier ploughing matches, under the auspices of this Society, the premiums were given to those who most speedily accomplished the work. In 1822 a fourth of an acre was ploughed by one of the ox-teams in 25 minutes, and none of the teams then in competition occupied over 36 minutes. During more recent years, however, this extraordinary speed has not been encouraged, and the ploughmen have been charged to regard the excellence of the work, rather than the time in which it is performed. The committee, in pursuance of this principle, have fixed the time of 50 minutes, within which each quarter of an acre should be ploughed, exclusive of five minutes rest.

Twelve ox teams and nine horse teams were entered for the trial and completed their work. All the lands were completed within the time limited, and the times of the several lands varied from 40 to 50 minutes. It is believed that of the ploughs whose work obtained premiums, *seven* were the Ruggles ploughs, *two* Miller's, and *one* Bonney's.

The rules prescribed to the ploughmen were, that the furrow should not be less than 5 inches in depth, and the furrow slice not more than 11 inches in width. This rule is prescribed by the By-Laws. In the opinion of the committee, deeper ploughing should be encouraged.

Horse teams,	1st	premium,	to	Horatio N. Tuttle, of Sheffield,	$7
"	2d	"	"	Abiather Sikes, Pittsfield,	6
"	3d	"	"	Daniel Sprague, "	5
"	4th	"	"	Loomis Millard, Egremont,	4
"	5th	"	"	Ira C. Gaylord, Pittsfield,	3

Ox teams,	1st	premium,	to	Leonard Tuttle,	of Sheffield,	$7
"	2d	"	"	Asaph D. Foote,	" Pittsfield,	6
"	3d	"	"	John Sears,	" Lenox,	5
	4th	"	"	Titus Parker,	" Pittsfield,	4
	5th	"	"	Daniel Sprague,	" "	3

JULIUS ROCKWELL, *Chairman.*

PLYMOUTH AGRICULTURAL SOCIETY.

From the Reports of the Committees of this Society, and the statements accompanying the same, the following selections are made.

On Improvements.

Some years since the Trustees of the Plymouth County Agricultural Society offered three prospective premiums, "for the most extensive forest of any kind of trees suitable for timber," &c. These premiums were claimable in 1845.

For these premiums, two claims were entered; and the committee having been into, and got fairly "out of the woods," ask leave to submit the following report.

They recommend the award of the first premium of fifty dollars to the Hon. Morrill Allen, of Pembroke, he having planted and cultivated, agreeably to the requisition of the offer, nine acres three quarters and thirty rods; and the second premium of thirty dollars to Mr. Pardon Keith, of West Bridgewater, he having raised six acres and twenty-five rods.

Much credit is due these gentlemen for the patience and perseverance with which they have prosecuted this important and novel undertaking; and the committee were no less astonished than gratified in noting the rapid growth of forest trees on a soil so totally exhausted of all vegetable matter, that no herbage could exist.

If he is a "benefactor of mankind who causes two spears of grass to grow where but one grew before," how much more of a benefactor of his race is he who causes more than one thousand forest trees to grow on an acre of land nearly as barren as the sands on the desert of Arabia? The committee are of the opinion, that the results of those experiments alone, if rightly appreciated, are worth more to the County of Plymouth than all the premiums ever awarded by the Society; as they establish the fact, that certain kinds of forest trees can be advantageously

raised on the most sterile soil. And how many thousand acres of sandy plains and barren hills are there in the county, that, for a series of years, have made the poor owners, who have attempted to cultivate them, "poorer still"? The rapid destruction of our forests by the "woodman's axe," caused by the increasing demand for fuel and lumber, as the country increases in population, in steamboats and rail-roads, must make it obvious to every reflecting mind, that it is high time and of the utmost importance, to propagate, preserve, and protect our forests; that there is no investment so safe, and no reward so sure. For, whilst in many parts of the country, within the last half century, cultivated lands have decreased in value at least one third, yet, during the same period, our wood lands have steadily advanced, and now command more than twice as much.

Although the committee believe they cannot too strenuously urge the planting of forest trees on exhausted and barren fields, yet they cannot but deprecate the mistaken policy that has rendered so many of those fields sterile. A key to the grand secret why they are so, we think may be found in the remarks of one of the competitors for these premiums. In describing his lots, which are nearly two miles from the homestead, he says:—

"This lot was first ploughed about fifty years ago, when it was *thought best to subdue all wood lots capable of cultivation, whether near or more remote from the owner's building*," &c. "Lot No. 3, is a hard, husky, stony soil, first ploughed about fifty years ago, has been exhausted by *continual mowing and tillage, with little manure, it being far from the owner's barn.*"

"Our fathers did so before us," but their drafts were drawn on a virgin soil, rich in the accumulated vegetable and alluvial deposits of ages. For a time those drafts were honored with bounteous harvests, but the miserly cultivator failing to cancel the debt, with manure or its equivalent, his drafts have at length been protested. Mother earth cannot be cheated with impunity, and no one should attempt it, unless he can subscribe to the doctrine of the poet:

> "And sure the pleasure is as great
> In being cheated as to cheat."

As like produces like in the animal creation, so little produces little in the vegetable world; and if you attempt to stint her in the food necessary to bring vegetation to perfection, dame nature will show proper resentment in giving you the dwarfs instead of the giants of the vegetable world.

In behalf of the committee,

HORACE COLLAMORE.

Statement of Morrill Allen.

Early on my acquaintance with soils in the County of Plymouth, I supposed the general interest demanded the conversion of a large portion of our light and exhausted soils into forests. The reclamation of them into profitable, cultivated fields, could not be effected without a greatly increased population. By converting them into forests, the condition of them is improved for purposes of culture, if the wants of society should ever require them for such use.

In 1807, I purchased a piece of the Indian fields, so called, exhausted so much that it produced very little of herbage; it was ploughed, and sprouts from locust trees transplanted into it. This experiment was attended with satisfactory success. The young locusts grew finely and gradually improved the soil. The field, for a number of years, has afforded very decent pasturage, and the trees have been in cutting for timber.

In 1819, a tract of land was purchased, on which there were several exhausted fields, some of them have been seeded from the neighboring forest, and some have been sown with different kinds of seed, and with various success. Since 1819 exhausted fields have been purchased to considerable extent, with a view to their conversion into forests. But the contemplated course has been to some extent obstructed by the necessity of fencing the fields. Four or five acres of common land were sown in 1828 with white pine seed, in furrows cut about eight feet apart; the seed vegetated well, but sheep destroyed all the plants the first season. This failure induced the adoption of another plan. The field intended to be sown with forest seed, was fenced and

ploughed, rye and forest seed sown the same fall, and the fence kept up till the danger of injury to the trees from the browsing of cattle had passed. The lots on which premium is claimed have generally been managed in this manner:—Lot No. 1, on the plans accompanying this statement, was ploughed and sown in 1835; the forest seed did not vegetate as was expected, and in the fall of 1836, more forest seed was cast on, after which there seemed to be a sufficient number of young trees, though very irregular in distances, which may be no great evil in a forest. This lot was protected by the fence till the fall of 1839, when it was removed to enclose lot No. 3, which has been managed in a similar manner, excepting a few locust trees have been transplanted on the border of it, and some chestnuts were planted in 1840, which give promise of only a very slow growth; the soil probably is not suitable for them.

Lot No. 2 was not sown with any kind of forest seed, but little white birches were transplanted into it in 1841–2. These will not be likely to grow quite as shapely and well as they ordinarily do from the seed, but the soil was so poor it was doubted whether seed would get any hold there.

Lot No. 4 was ploughed in 1833, and planted with locust seed; the seeds came up generally, the plants were cultivated a little one or two years, and appeared promising, but, ere long, the worm began to annoy them, and has continued its depredations ever since. The only hope of much success with the locust is, that the worms may presently cease their ravages; and where the land is filled with roots, sprouts may spring up and grow rapidly. After it was perceived that the locusts were not likely to flourish, some other seeds were planted on the lot, and some young trees transplanted into it. On the most barren lots there has been a solicitude to see something growing, and any kind of tree has been transplanted which it was thought might live.

With something more of labor and expense, a degree of regularity in the distances of the trees might have been produced, but it was the purpose to effect a valuable object in so cheap a manner, that the attention of all farmers, possessed of sterile fields, might be directed to it. Were cattle entirely excluded

from our commons, extensive tracts, now useless, might in twenty years be covered with a thick growth of white birch, ripe for the axe; or in thirty years with a growth of white pine, some of which would be large enough for ranging timber, and all this merely for the labor of gathering the seed and scattering on the land.

The seed of birch can be easily gathered any time from the 20th of October till the winter. And in many situations this will be found the most profitable wood for fuel, and some other purposes, that can be cultivated.

The seed of white pine must be gathered very soon after the first autumnal frosts. When it is wanted in large quantities, the most expeditious method of obtaining it, would be to cut down large trees, each of which would yield an abundance of seed. The cones of the pitch pine often grow so near the ground, they can be easily reached; these do not so readily open as those of the white pine, and therefore it is less important for us to be very exact in the time of gathering.

The pines and birch, which seem best adapted to soils that are likely to be used as forests in this county, are produced with so little expense of labor, we may be permitted to wonder that something of earlier attention was not given to the subject. Cheap and plenty as wood and timber have been in our country, a growth of any kind of wood, in the last half century, was greatly preferable to a state of barrenness.

In one of the lots above described, acorns have been planted, and, notwithstanding the poverty of the soil, the trees promise ultimately to amount to something; those which have been cut down in the spring, after they were three or four years old, have sent out shoots which are straighter and something more thrifty than the original shoots from the acorns.

If forests of the several kinds of oak are raised, it will be advisable to plant the acorns in regular rows, and plough and hoe among the young trees for several years, as we do in fields of Indian corn. The accelerated growth of the trees will amply pay somebody, if not the performer, for the labor. The white oak, in particular, as it ordinarily stands in the forest, is slow in growth, but cultivation will bring it to maturity in about half a century.

There seems to be but a single reason why there should not be more attention given to the extension of our forests, and that is one taking its origin in the yankee notion, that prompt payment must be realized for whatever we do.

Pembroke, Sept. 1845.

Statement of Pardon Keith.

Annexed to this you will find plans of the three lots of forest trees raised by me from the seed.

Lot No. 1, on Salisbury Plain, is a thin, poor soil, exhausted many years ago. It was first ploughed about seventy years ago, it was last planted about twelve years ago. It was sown with pine and birch seed, but principally pine, at several different times, from 1837 to 1840. A portion of the trees were transplanted from 1840 to 1845. The greater part of the lot was furrowed with a plough, and the pine seed left on the side of the furrow without covering. There are more than three thousand trees raised from the seed now on this lot.

Lot No. 2, is a gravelly, poor soil, surrounded by old wood lands; was last ploughed in 1830, at which time it was mostly covered by what is usually called "*woods grass*," and may truly be said to be worthless for cultivation. The pine seed was sown with the rye, at the usual time of sowing winter rye, in 1830. The lot was first ploughed about fifty years ago, when it was thought best to subdue all the wood lots capable of cultivation, whether nearer or more remote from the owners' buildings. The value of this lot is increased more than fourfold by means of this seeding. There are more than two thousand trees raised from the seed on the lot; but how many more I cannot say, as they were not all counted.

Lot No. 3, is a hard, husky, stony soil, first ploughed about fifty years ago; has been exhausted by continual mowing and tillage, with little manure, being far from the owner's barn. In 1839 I planted the pine seed by digging small holes with a hoe; filled the holes with the earth dug out, and put the seed on the top, merely dusting the seed over after it was dropped. More than twelve hundred pines, raised from the seed, have been

counted on this lot, and more than two hundred and sixty young birches from the seed. The young pines are fully sufficient to cover the whole lot, with a few more years' growth.

My experience has taught me that forest seeds will vegetate best, to be left on the top of the soil after it has been well pulverized by the plough and harrow. Though in that way it is exposed to the depredations of the squirrels and birds; and transplanting has been practised to cover vacant spaces. The young trees may be transplanted with success at any time from October to June, when the ground is not frozen. Make a triangular incision with a shovel round the young tree, and it may be easily taken up and placed where it is needed. Forest seeds may be sown in either of the fall months with success: if the earlier months are more favorable for vegetation, the seed sown early is more exposed to the depredations of squirrels and birds.

From an experiment made in pruning young pines, I am fully satisfied that to cut off the green limbs is injurious to the tree.

West Bridgewater, Oct. 4, 1845.

Supervisor's Report.

The supervisor, in the performance of his duties, has travelled in most of the towns in the county; and has witnessed, with great satisfaction, the progress of improvement in various branches of the agricultural interest. The most observable and important improvements have been made in the renovation of useless swamps. In every town, the axe, the hoe and plough are penetrating those recesses, which our fathers regarded only as fit receptacles for noxious animals and reptiles. Where, a few years since, there was nothing to be seen either of the beautiful or useful, we now behold an attractive carpet of luxuriant grass, we anticipate the fulness of barns, the health, joy and vigor of full fed domestic herds.

In the reclamation of swamps, our citizens have learned to cultivate the grasses to greater advantage in all fields, instead of the slow and exhausting process of pulverizing soils in the

cultivation of grain crops; grass seed is now sown on the inverted sod, by which practice the crops are increased, and the energy of soils retained.

The tilled fields in this county in very few instances now present the traveller with the disagreeable sight of thousands little mounds of earth, indicative of belief in the operator that the surface soil is not sufficiently warm for the growth of plants, that the store-house of their food must be elevated something nearer to the sun. The practice is very properly growing into favor to cultivate Indian corn on a level surface and sow grass seed at the last hoeing. Proportionate to the prevalence of this practice, we presume, occasions of complaint that the young grass has been winter-killed will be diminished.

The fields, in several of the towns, are enclosed altogether with rail fences; many of these are in a broken and falling state. While the traveller is painfully impressed with appearances, and looks into the surrounding swamps in search of the materials to repair the almost daily increasing breaks, he perceives so great diminution of those materials, he is led to regard the burden on the present generation as great, and feels a painful anxiety for the welfare of the future. Without something of general attention shall be directed to this subject, and some substitute provided for post and rail fence, it is not perceived how many future generations can possibly keep their fields enclosed. Several substitutes may be recommended, some of which it would be wise in many of our farmers immediately to commence. White pines, or any other trees of quick growth and long life, might be planted in rows ten or twelve feet apart, where fence is wanted, and in fifteen, or at the extent in twenty years, mortices might be made in the trees, and rails inserted, the wounds in the trees would soon heal, and if the rails were of good timber, a fence would be secured, which would last at least half a century. Another and even more enduring substitute for post and rail fence, is the live hedge; this can be produced by planting any of the several kinds of the shrub family, or by planting trees, and, as they grow, trimming them down into the form of shrubbery. The amount of labor required in providing either of the above substitutes, and the distant reward

of that labor, will operate as great discouragements to engagement in such enterprises. But the importance of them to the prosperity of those who will succeed us must abundantly justify keeping the subject before the farmers, and urging them to do something for the relief of posterity from a burden which may prove too heavy for them.

This Society early encouraged the planting of hedges, in offer of premiums. Those offers commanded no attention. And the time may not have arrived now, when this kind of improvement can be much advanced by proposing premiums. But no time should be lost in preparing the minds of farmers to realize the importance of the subject, in calling their attention to the burdens which even now bear very heavily on those who support post and rail fences, and earnestly inviting them to consider well what must be the difficulties posterity will have to encounter, if no substitutes be provided. Among the applicants for premiums this year, we have found a number of ingenious experimenters, men whose zeal insures them something of improvement. With several of them, however, zeal has carried their attention to more objects than they could well accomplish. They have done something in various experiments proposed, and hope the trustees will not require of them a strict compliance with prescribed rules. Dispensing with given rules is always of dangerous tendency, and might be practised to an extent which would entirely defeat the most important purposes of the association. The committees take pleasure in giving rewards to successful and meritorious labors, but in all their doings think it incumbent on them to consider what means are the most likely to bring the greatest amount of meritorious labor into the field in future years.

To the Committee on Improvements three claims have been presented for the renovation of swamp land. This we regard as one of the best objects for which premiums are paid, but think claims are sometimes made for the renovation of too small pieces of land. The first premium of $15 is awarded to Joseph Kingman, of West Bridgewater. He has reclaimed one acre and nineteen rods. The second of $10 to Josiah Whitman, of East Bridgewater. To George W. Wood, a gratuity is awarded

of $4. He has operated on less than an acre, and would not be considered as entitled to any reward, but for the very useful character of this kind of improvement.

The first premium of $10 is awarded to Henry Alden, of East Bridgewater, for an experiment in the use of salt as manure. The statement of Mr. A. shows an unquestionable salutary influence of salt on the soil, and also shows that great care and prudence are necessary in the application of it.

Joseph Northey, of Scituate, entered a claim to the premium offered for the collection and judicious application of the largest quantity of kelp and other sea weeds. Mr. N. has carted on to his farm, and used to great advantage, 156 loads. This quantity is not considered sufficient to justify the award of the premium. But the example of Mr. N. in calling public attention to so valuable a species of manure, and his suggestions respecting the application of it, are deemed worthy of some notice; therefore it is recommended that $4 be paid him.

Two claims were entered to the premiums offered for the greatest quantity of the most valuable compost manure. Benjamin Hobart, Esq., of Abington, one of the claimants, states that he has made a large quantity, which he could not consistently with his plans cart out and measure this fall; and suggests the expediency of requiring compost manure to be made and measured from June in one year to June in the next. Such an alteration, we think, if it might accord with the particular plans of Mr. H., would be extremely inconvenient for most of our farmers. Should the trustees think any alteration advisable, it could not properly extend farther than a change of the time when the measurement of the manure should be finished, from the first of October to the first of November. Mr. H. has made a considerable quantity of valuable compost manure, but it seems to have been effected in the usual course of business, without much more than ordinary exertion. We award him Colman's Report. George W. Wood, of Middleborough, the other applicant, has made a less quantity and of something inferior quality, but it is believed that he has put forth more exertion in the case; his means are much more restricted; therefore we recommend that a gratuity of $5 be paid him.

For subduing bushes in pasture land, the first premium of $10 is awarded to Paul Hathaway, Esq., of Middleborough, who has subdued a thick growth of bushes, on nearly three acres of very rocky pasture land. Mr. Stafford Sturtevant, of Halifax, entered a claim for subduing bushes, and commenced the work, but afterwards conveyed the land to his son in law, Cyrus Thompson, in whose name the statement came. The committee think claims of this kind not transferable, but, on a representation that the work had been finished by Mr. T., they allow him a gratuity of $4.

The Committee on Produce award the first premium of $15 for the greatest crop of wheat, to Benjamin Hobart, of Abington. Mr. H. raised a fraction over twenty-two bushels on an acre. His statement shows great care in the preparation of his land, and continued success indicates skill in the culture of this crop. But we cannot think, as Mr. Hobart's statement seems to imply, that it is a very profitable crop in this section of country, even in the most skilful hands. Mr. H's land was pretty highly manured in 1844; last spring he put on twenty loads of good compost manure. After the wheat was up, he sowed on it one bushel and a half of plaster, mixed with twenty pounds of guano. Deduct the whole expense from the value of the crop, and very little, if any thing, will remain for the use of the land. We think it prudent for farmers in this county, to sow wheat only on particularly favorable fields. Our lands generally have lost much of the qualities which are necessary to carry this grain to perfection, and which cannot be restored otherwise than by continued high cultivation.

Claims were entered by Messrs. H. Collamore, of Pembroke, and B. Hobart, of Abington, to the premiums offered for the best experiments to prove the influence of subsoil ploughing on the corn crop. These gentlemen are in the habit of giving us fuller and more satisfactory statements than we usually receive. The results in both the experiments are satisfactory as to the salutary influence of subsoil ploughing; but widely different, partly through circumstances over which one of the operators could have no control, and partly through the neglect of the other. The corn in Mr. C's field was in the first instance made

uneven by the ravages of worms. After the corn had grown, many depredations were made by the feathered tribes, and by another sort of animals, whose true characters might be represented with feathers on a coat of tar. It was difficult to find two adjoining, unbroken rods in the field. In the selection made there was a manifest difference in favor of the rod not subsoiled. The weight of the corn on the subsoiled rod was 41¼ pounds, on the other rod 38¾ pounds, making a difference of a fraction over five bushels to the acre. The whole crop was afterwards weighed, but that result claims far less reliance than the first test, on account of inroads made on the field. Mr. Hobart's field was less broken, but by some neglect not planted equidistant, the line of separation between the subsoiled and the other part not very distinctly marked, for which reason the rods selected as tests were some distance apart. The corn on a square rod of the subsoiled part weighed 46¾ pounds, on the other part 37 pounds, making a difference of nearly 21 bushels to the acre. In this experiment, it is believed the test made, showed too great a difference, and, in the other, too little. Either experiment, however, clearly proves the utility of subsoil ploughing. The first premium of $10 is awarded to Mr. Collamore. The second of $6 to Mr. Hobart.

To Nathan Whitman, of East Bridgewater, the first premium of $8 for the best crop of barley. He raised 34 bushels and 18 quarts on an acre.

To Daniel Alden, of Middleborough, the first premium for oats $8, and to Nathan Whitman, the second of $6. The crop of oats raised by Mr. A., and the measure, attested on his oath, which the rules of the Society do not require, is an unprecedented one in this county. Seventy-one bushels to the acre must be regarded here as an enormous crop. Mr. A. manured very highly, and stirred the soil thoroughly before sowing; he soaked his oats in water 24 hours, then rolled them in ashes. He sowed two bushels and three pecks on one acre and forty-seven rods, considerably less than farmers generally use. There appears to have been nothing in this experiment widely different from the practice of good farmers, excepting the small quantity of seed used, soaking and mixing with ashes. If to these circum-

stances the remarkable success should be ascribed, they certainly claim the attention and observance of our farmers.

Four claims were entered for the largest crops of Indian corn. The season was unusually favorable for this plant. But about the time the corn ripened, there was an abundance of rain; the moisture in the cob increased the weight. Some deduction in every instance should be made. The three fields, however, which gave the greatest products, were tested on the same day, therefore the comparisons among the competitors must be just. The corn on a square rod in the field of N. Whitman, weighed 59¾ pounds, on that of L. Hill, 55¾ pounds, on that of J. Whitman, 48½ pounds, and on that of O. Litteljohn, 39 pounds. Nathan Whitman is entitled to the first premium of $8, and Leonard Hill to the second of $6. The committee recommend the award of Colman's Report to Josiah Whitman, and that a gratuity of $5 be paid Mr. Litteljohn.

Mr. Collamore, of Pembroke, and Mr. Litteljohn, of Middleborough, have performed a meritorious service, in showing the practicability of restoring exhausted fields to a productive state. Farmers possessed of such fields, will do wisely in an imitation of their examples, keeping constantly in view the maxim which governs discreet travellers, who, having long journeys before them, make not too great haste in the commencement.

The premium of $6 for the greatest crop of white beans on half an acre, is awarded to George Drew, of Halifax, who raised twelve bushels and two quarts on half an acre and eight rods.

The premium of $5 is awarded to Orsamus Litteljohn for the best crop of carrots. He raised 144¼ bushels on one quarter of an acre.

To Galen Manley, of North Bridgewater, is awarded $5 for the best crop of onions. He raised 141 bushels on fifty rods of land.

To George Drew is awarded $3 for the best crop of French turnips. He raised on a quarter of an acre 204¼ bushels. To George W. Wood, one volume of the New England Farmer; he raised 197½ bushels. To O. Litteljohn, one volume of the Massachusetts Ploughman; he raised 103¾ bushels. To J. Whitman, one volume of the Boston Cultivator; he raised 103¼ bushels.

The premium of $6 for the best crop of potatoes is awarded to Dexter Pratt, of East Bridgewater, who raised 320 bushels on an acre. Leonard Hill gave a statement, in which he reported a larger crop, but had not complied with the rules; to him is awarded Colman's Report. The season was unfavorable for potatoes; the malady which prevailed to some extent in the county last year has increased, and, in some sections, worms have eaten nearly half the crop. Against the ravages of worms we can suggest no certain preventives; a good precaution would be to guard against allowing manure to come in contact with the seed potatoes. The causes or preventives of the disease in potatoes are not yet satisfactorily investigated. As far as experiments have been made, the results encourage the continued application of lime, plaster and salt. We have witnessed no instance where either of these substances had been applied in small quantities, that many of the potatoes were defective. One experiment made by me seems to prove that the disease is not propagated through the seed. The last spring, a piece of land was planted altogether with defective potatoes, some of them half decayed, some two thirds, and a number entirely decayed, so that they could not vegetate, were cast into the hills with the others. On digging this fall, no defect was discovered in the new crop, the potatoes have been in the cellar a number of weeks, and remain, apparently, entirely sound.

Respectfully submitted,

MORRILL ALLEN.

Bridgewater, Nov. 12, 1845.

Statement of Joseph Kingman.

The piece of land on which I have put in a claim to the premium offered by the trustees of the P. C. A. Society, for the largest quantity of land which shall be in the best state of preparation for English mowing, Sept. 1st, 1845, which was fresh meadow or swamp land, June 1st, 1844, may be called meadow pasture, the soil or muck varying from six to fifteen inches deep, resting on a hard pan of clayey gravel; part of the

lot was thickly covered with bushes; all of it quite stony; about one third part of it literally paved with stones.

I commenced in the autumn of 1843 digging the stones and ditching on one corner, but was prevented clearing but a few rods by heavy rains. I resumed operations in August, 1844, by clearing it of the stones above the surface, and disposed of them in building a wall on three sides of it. I then dug six ditches across the lot, parallel with each other, in such place as would best drain off the water.

There are about 65 rods of ditch, the cost of which was $12. The ditches were dug several inches into the hard strata below the soil, and the contents spread over the surface. I then hauled and spread about 100 loads of sand and loam, at an estimated cost of ten cents per load. I then spread on about 25 ox cart loads of compost manure, made by ploughing up the bottom of my cow yard, and yarding my cattle on the same through the summer. This compost, excepting 5 or 6 loads, which were pretty good manure, I considered not worth more than 40 cents per load. I then (about the 10th of Sept.) sowed the grass seed, and covered it with a bush. No part has been ploughed.

As to the cost of digging the stones, drawing them off and placing them in the wall, I cannot say with accuracy; no account of the time was kept; it was done by odd jobs. If I had hired the work all done, it probably would have cost $40, but as the stones were used in the wall between this lot and others, where a good fence was needed, I should think that $25 would be enough to charge to this lot, making the whole cost as follows:—

For removing stones,	$25 00
" ditching,	12 00
" 100 loads of sand, and spreading,	12 00
" 25 loads compost, " "	13 00
" grass seed,	1 50
" sowing and bushing,	1 00
	$64 50

The piece of land contains (as measured by Mr. Copeland) 1 acre 19 rods. Cost per acre, 56\frac{99}{100}$.

I cut off first crop about one ton of good hay. One third part I mowed again in September, and should think cut four or five hundred of rowen.

West Bridgewater, Oct., 1845.

Statement of Josiah Whitman.

The land mentioned in the annexed certificate was a bush pasture in June, 1844, except one fourth of it, which was the same in 1843. I then ploughed it and carted the brake and bush sod from it. Could do no more that season for water.

In June, 1844, mowed the bushes and brakes. The bushes were swamp and upland whortleberry bushes. August 1st, burnt the bushes and brakes; 10th, ploughed it with six oxen and a horse and four men, or rather tore up the bunches of bushes and brakes. I then laid an open drain through the lowest part of it, and commenced levelling the same with hoes and axes. The brake sods and some of the bush sods I burnt; others I put into two pond holes, but for the greater part I dug holes, and sunk them. By doing this way, I am in hopes the land will be better; so far it appears better than where I carted them from the ground. I would here observe, that my ploughing only served to loosen the sod, as I had to hoe and shovel over the most of the ground. After levelling the land, I spread on seven loads of weak compost manure, and sowed one bushel of Northern red top, and one half of a bushel of herds grass seed, and hoed and raked in the same.

The whole expense on an acre was $57 00.

I have this season taken from said acre one ton and a half of English hay, valued at $10 per ton standing, . . $15 00

And four hundred of rowen, valued at . . . 2 00

$17 00

East Bridgewater, Oct. 10th, 1845.

Statement of Henry Alden.

I submit the following statement of an experiment in the use of salt as manure.

In April, 1843, mixed 2 small loads of barn manure with the same quantity of peat thrown lightly into a heap. At the same time, mixed with it one bushel of coarse salt.

Prepared one other heap with the same quantity of the different kinds of manure, except salt. In May, one quarter of an acre of dry, thin land, was ploughed and furrowed both ways, 3 feet 4 inches apart, and on the 18th of May, about two thirds of said heaps dropped in the hills; the salted manure, put on 20 rods; that not salted, put on the other 20 rods; one half of each planted with corn, the other half with potatoes.

June 7.—The whole ploughed both ways, and all that was up at that time was hoed. The 20 rods salted was not up. The potatoes began to break ground about the middle of June, but were not all out of the ground before the first of July. The corn did not appear above ground until about the 14th of June, and but a small part at that time.

June 16.—Dug open most of the hills of corn and planted potatoes. The whole was afterwards twice cultivated both ways and twice hoed.

That part of the manure not used at planting, I intended to have spread before I hoed the first time, but, on account of the failure in the coming up, did not spread it. As the corn on the salted part failed, the corn on the other was not weighed.

October 10.—The potatoes on the salted part were dug and weighed, making 14 bush. 5 lbs., not including those planted where the corn failed. Those on ground not salted weighed 12 bush. 56 lbs. The corn on the salted ground that did come up, spindled and put out for ears, but did not fill. I would state one fact, which I observed in regard to the heaps of manure remaining unspread through the season. On that which was salted, there were no weeds, while on that unsalted the weeds grew very rank.

The next spring I spread broad-cast one half bushel of salt on the 20 rods of salted ground, and spread the manure belonging

to each 20 rods, and prepared the ground for oats and grass, and sowed the same.

At the time of harvesting I had on the salted ground, 2 bushels, 3 pecks; ground unsalted, 2 bushels, 3 pecks. The oats on the salted ground were 4 lbs. to the bushel heavier than on the ground unsalted.

On the next spring, 1845, I spread broad-cast one half bushel of salt on salt ground.

On the 4th of July mowed the grass on the above ground and made it—

Hay weighed on salt ground, ...	156 lbs.
On ground unsalted, ...	133 "

As it regards the use of salt on our lands, I consider it better to spread it on the soil and harrow it in, rather than to mix it with a compost.

Statement of Paul Hathaway.

The pasture land entered for premium abounded with rocks and stones, covered almost with bushes, which had been cut for forty years, nearly every year. I could keep down the tops, not destroying a root. The premiums offered aroused my attention, and I have commenced operations; and my opinion is, that I have expended enough in cutting bushes to have paid the expense of subduing the same, root and branch, four times. The expense is as follows :—

Six oxen and a horse, with four hands, one day and a half, ...	$12 00
Four oxen and three hands, two days, ...	10 00
Crossing the same, one yoke of oxen, two hands, four days, ...	12 00
	$34 00

This year, upon the same land :—

One yoke of oxen, two hands, four days, . . .	$12 00
The same oxen, and three hands, two days, carting and dragging stone, ...	8 00

Abraham Perkins and team, two days, harrowing and bushing, ...	$5 00
Hands with hoes, and iron bars, twelve days,. . .	12 00
	$37 00

I have surveyed and measured the same, and it contains 2 acres, 3 qrs., 8 rods.

October 21*st*, 1845.

Statement of Benjamin Hobart.

I have, since last March, carried out and used on my farm 160 ox wagon loads which would measure 175 loads, of 40 cubic feet to each. This was rich, valuable compost. It was composed of good materials, carried in last season, and mixed up early in the spring with all the green barn manure, and from a hog stye, including the manure of a stable of seven horses. The green manure was all kept under cover until spring, and then all dug up and mixed in two large heaps with the stuff carried in, as before stated. Ashes, some lime, and several casks of plaster, and some salt, were thrown into the heap promiscuously.

Besides this, I have carried out and spread on my farm, principally on my grass lands, more than 500 loads of scrapings, peaty matter, from the sides of roads, and from where roads have been lately made, and have carried, and now have in my yards and styes, about 200 loads of very good materials, to mix up and compost as above, manure for next spring's use, into which I have this season thrown weeds, ashes, lime, and brine from beef and mackerel barrels, and other scrapings; yarded the cows, and kept hogs on the same, and occasionally ploughed the whole over to mix these ingredients.

South Abington, Oct. 14*th*, 1845.

Mr. George W. Wood, of Middleborough, stated that his method of composting manure was, to collect into his hog and barn yards, much soil from ditches, from the borders of roads

and fences; these materials, and what small bushes, bog hay, and weeds he could gather, he mixed thoroughly with the ordure of his stock, which was constantly yarded during the winter. For some purposes, he makes compost heaps of swamp muck and ashes, which proves an effective manure, particularly for turnips.

Statement of Benjamin Hobart.

The acre of ground on which I had the wheat was in potatoes last year from green sward, with a good top dressing; this spring I ploughed it early with a common plough, and then again the last of April with the same, following after in the same furrow with a subsoil plough; harrowed it, and put on 20 loads of good compost manure from my barn yard, spread it, ploughed the same in lightly, harrowed it twice to get the seed covered, and bushed the same over; sowed the grass seed before bushing.

The wheat which I sowed was of my own raising, and the same kind that I had raised for several years; it came formerly from the eastward; it is of the bearded kind, and is supposed to be what is called the golden straw wheat. On the 8th day of May, I sowed three and one half bushels to the acre; about one half I soaked in strong beef brine for 24 hours before sowing, and rolled it in plaster, but I perceived no difference in the straw or wheat from the part soaked or that which was not. On the acre, after the wheat was up, I sowed about 1½ bushels of plaster on the same, mixing with it 20 lbs. of guano. I reaped the wheat August 1st, and did it out by a threshing machine, August 18th, letting it stand shocked in the field 10 days. From sowing to reaping was 84 days. I had 22⅛ bushels of good clean wheat fit for sowing. I sold the straw on the acre for over $8 in town. I usually sell my wheat for sowing, from $1 25 to $1 50 per bushel. I find it an excellent feed for poultry. It will make them great layers of eggs. Every farmer ought to raise some for this purpose.

I have, for more than a dozen years, been in the habit of raising wheat, and find it as easy to raise, and prefer it to rye

and oats. I think the same kind of wheat continued to be raised on a farm for years is better than to shift often. It seems to become acclimated. I have always sowed the same kind, and I think it has improved.

South Abington, Oct. 14th, 1845.

Statement of Horace Collamore.

The land selected by me to "prove the influence of subsoil ploughing on the corn crop" is a sandy loam with a hard gravelly subsoil, which, until within the last twenty years, had, for a long series of years, been constantly cultivated with grain crops, till it protested further drafts; since that time, it has been, in a measure, restored by dressings of mud compost and grass crops; it was laid down to grass in 1839.

One acre was measured, and an equal division made. Each half acre received fifteen loads of barn manure, which was spread on the sward and ploughed under, the first week in May. The whole was then rolled and harrowed, and on the 9th of May the whole was planted with Buckminster's corn planter, as near three feet one way and two feet the other, as possible: after weeding, we thinned out the corn, leaving three kernels in each hill, where there were as many; but there were a considerable number of missing hills which we attempted to supply by transplanting, but owing to the drought did not succeed very well.

The corn on the subsoiled part gave evidence of superior luxuriance soon after weeding, and, notwithstanding the sufficiency of moisture that succeeded the early drought, it maintained this superiority throughout the season, and was at once recognized by every visitor. And although the result, after harvesting and weighing, was not so favorable to the part subsoiled as I had anticipated, yet I feel perfectly satisfied, after making due allowance for the depredations of "birds, *beasts and reptiles.*" The soil was not quite as good as the part not subsoiled,—was harvested and weighed about a week sooner than the other part, and, consequently, weighed heavier, and was not exposed to

depredations so much nor so long. The result was as follows:—

On the half acre subsoiled we had $25\frac{72}{75}$ bushels of corn, and on the half acre not subsoiled we had $23\frac{21}{75}$ bushels.

The corn was sounder and better on the part subsoiled; less pig corn by one third; and, I believe, had it not suffered from the depredations named, there would have been six bushels more at least on the lot.

Pembroke, Oct. 31, 1845.

Statement of Benjamin Hobart.

The acre of ground on which I planted the corn was in green sward last year; ploughed after I took off a crop of grass; and on the top of the furrow, after spreading on 15 loads of good compost manure, and harrowing it well, I sowed turnips; the season being dry, I had but about 100 bushels. I ploughed this acre on the 13th of May last, and on one half of it followed the first plough with a good new subsoil plough, and did it well; then ploughed the whole again with a common plough and harrowed it, and put on 24 loads of good compost manure from the barn-yard; spread and ploughed it in, furrowed both ways 3 feet apart as I supposed, but it proves to be about $3\frac{1}{2}$ feet apart, and put 4 kernels of corn to the hill, and at weeding pulled up all but 3 stalks in the hill. The corn was of a very bright yellow kind, resembling the Phinney, but such as I had planted for 20 years past.

I have taken much pains always to keep my seed pure, selecting the same colored ears, and same number of rows on the ear; at one time I got nearly all into 12 and 16 rows, but the cob was so large it took much longer for it to dry for the crib, and I had some hurt. I then selected the 8 rowed, and one of that kind from hills standing in the field where there were two ears on a stock; but I could not always get the same rowed and color or number of ears on a stock in this way, but a very great preponderance of the kinds selected. I found the ears became very long on the 8 rowed, and I give it the preference; it affords a larger kernel, and ripens sooner.

I put 20 lbs. of guano, mixed with about two bushels of plaster, in the hills before covering, about a great spoonful in each. The result is before your supervisor, who has inspected the same and weighed one square rod on each half acre. The experiment appears to be much in favor of subsoiling, but as it will be reported upon by abler hands, I shall not particularize. I shall only add I have subsoiled on other parts of my farm to great advantage.

South Abington, Oct 14th, 1845.

Statement of Nathan Whitman.

The undersigned would respectfully give a statement of the manner which he pursued in raising an acre of corn. May 15th, 16th and 17th ploughed, and hauled on and spread the manure, 35 loads on three quarters of an acre, and spread 50 bushels of ashes on the other one quarter of an acre; then ploughed it lightly again, deep enough to cover the manure, then went over with a brush to level it; then furrowed it one way 3 feet 6 inches apart, and planted the corn, dropping it 18 or 20 inches apart, three kernels in a hill. Finished planting 19th. The last of June went through the same with cultivator twice in one row, and hoed the same myself half a day, and a hand one day. This is all that has been done to it until your supervisor selected one rod and harvested.

N. B.—The soil of this acre is a yellow loam mixed with gravel about seven eighths of it, the other quite gravelly.

Statement of Daniel Alden.

The land was ploughed in the fall of the year 1843; in the spring of 1844 spread on 30 loads of good manure and ploughed it in; then planted it to corn, putting in 10 loads of manure in the hill; in the fall after harvest, spread on 25 loads of compost manure; the muck I hauled one mile, then added 25 bushels of leached ashes and four bushels of salt to the mud, which was of a clayey substance. The land on which it was spread was droughty, and I think this manure for such land to be very

good. Then ploughed it in, and in the spring of 1845 ploughed the land once and cultivated it once, then sowed two bushels and three pecks of oats, cost one dollar and one eighth. The oats I soaked in water 24 hours, then rolled them in two bushels of ashes; then cultivated the land twice and harrowed it once, and then rolled; the oats were sowed the 15th day of April. The oats measured 92 bushels; we think the loss in cutting and threshing, 3 bushels, which would make 95.

Statement of Leonard Hill.

The land on which the corn was raised was in a good state of cultivation. One half acre was planted with potatoes in 1844 and had a large crop; the other half acre was mowed, and cu about ten or twelve hundred hay; both pieces together making one acre of land of nearly an equal quality. The whole was ploughed in May, 1845, eight inches deep; then I spread on 3½ cords of good stable manure; after the manure was ploughed in, I furrowed it one way, making the furrows 3 feet apart; then I put into the furrows 2 cords of the same kind of manure as before described, on which I planted 14 quarts of the large, smutty, white corn; dropped 3 and 4 in a hill about 20 inches apart, and covered it with a hoe, leaving the land level as before planted. The planting was done 13th to 15th of May; first hoeing, 10th June; second hoeing, about the 20th; it being free from weeds, I did not hoe it again. About the middle of September I topped the stalks and housed them. Probably I should not have topped the stalks, if they had stood up well, as they commonly do.

Statement of the expense of Corn Crop.

Ploughing,	$2 75
5½ cords manure,	22 00
Hauling on and ploughing,	4 50
Planting, &c.	4 75
Seed corn,	42
Hoeing first time,	2 75
Hoeing second time,	2 00

Killing weeds,	$0 75
Topping stalks,	2 00
Harvesting, estimated	8 00
	$49 92

Value of Crop.

$118\frac{39}{75}$ bushels,	$76 65
Topped stalks,	10 00
Butts,	8 00
	$94 65
Expense,	49 92
Profit,	$44 73

East Bridgewater, Oct. 14th, 1845.

Statement of Josiah Whitman.

The land, except an eighth of an acre of the same, was mowed in July, 1844; cut about one ton of hay to the acre. In November, 1844, I ploughed it eight inches deep. April 28th, 1845, drew on six cords of compost manure, made from the droppings of the cattle while housed the past winter, and soil (not so well made as it ought to have been), spread the same and ploughed it in with a horse, broke but very few of the sods. May 17th drew on two cords of the same kind of compost manure, and dropped the same in the drills, which were three feet six inches apart, and planted it nine inches the other way. It took half a bushel of seed corn; the seed was the smutty white, or what now goes by the name of the Whitman corn, saved from my last year's growth, by picking out my best ears when I husked my corn, and hanging up the same by the husks. June 11th, cultivated it out twice in a row and hoed the same, leaving two stalks in a hill. 24th, do.; and raised the ground a trifle around the corn. September, cut a few of the stalks, left the rest on until harvested.

East Bridgewater, Oct. 10, 1845.

Statement of the Expense of said Acre of Corn.

Ploughing,	$3 00
Eight cords of compost manure,	24 00
Carting and spreading manure and ploughing in the same,	6 00
Planting corn,	6 00
Seed,	50
Hoeing corn twice,	6 50
Harvesting, securing corn and husks,	9 00
	$55 00

The returns or credit for the Crop, viz.:

103 bushels of corn at 60 cents,	$61 80
Corn fodder,	12 00
	$73 80
Expense,	55 00
Profit,	$18 80

I allow that the manure is not all, or all its goodness, gone, and suppose the same is sufficient to pay for the use of the land.

Mr. Litteljohn prepared his land for carrots, by spreading on a quarter of an acre 20 loads of 30 cubic feet of compost manure, made of salt ley, droppings of animals and meadow mud. The land, a sandy loam; turnips on it the last year; it was free of weeds. Seed was sown with a machine; the dressing cost but little labor. Mr. L. estimates the whole expense at only $8 12.

Statement of George Drew.

The following is a statement of the preparation of the ground, the planting, dressing and harvesting, of a piece of White Beans, raised on half an acre and 8 rods of land:—

May 19, ploughed with 2 horses, $1, cultivated with 1 horse, 17 cents,	$1 17
June 3, manure drawn out and spread,	1 17
June 3, ploughed with a horse, 67 cts., harrowed, 17 cts.,	84
June 9, ploughed with a horse, 67 cts., harrowed, 17 cts.,	84
June 10, planted 2½ days, $1 87; 30th, hoed first time, 2½ days, $1 87,	3 74
July 28, hoed second time, 2½ days,	1 87
August 9, weeds hoed out, 1½ days,	1 13
October 14, harvesting one day,	75
October 18, threshing and winnowing, 2½ days,	1 88
Seed planted, 5 pecks,	2 18
	$15 57

Manure, 6 horse loads, spread on one half the piece of land, estimated equal to 4 ox wagon loads.

Planted 23 inches one way, and 21 inches the other.

The following is a statement of the expense of raising a crop of French Turnips, on a quarter of an acre of land :—

May 19, ground ploughed with two horses,	50
June 9, manure drawn out,	$1 00
June 9, manure spread, 17 cts., harrowed, 12 cents,	29
June 9, ploughed with one horse,	38
June 19, harrowed and ploughed, 50 cents, harrowed 13 cents,	63
June 20, planted, $1 13; July 10, thinned and hoed, $1 87,	2 00
July 28, hoed, $1 12; August 12, weeds hoed out, 75,	1 87
	$7 67

Manure, 7 one horse loads, estimated equal to 4 ox wagon loads cattle's manure. One spoonful plaster in each hill, 280 hills. Planted 2 feet one way, and 22 inches the other.

Halifax, Oct. 31, 1845.

N. B. Mr. Litteljohn estimates the expense of raising a crop on the same quantity of land, at $8 35. Josiah Whitman, at $13 87. George W. Wood, at $10.

Mr. Litteljohn states, that the land on which his crop of corn grew, was almost a barren waste, the acre not having produced more than one dollar's worth of herbage in a year, for the last five years. He spread on the acre, last spring, 55 loads of good compost manure of 30 cubic feet, and mixed it well with the soil. The corn was planted with great exactness, and about half a pint of ashes, plaster, and night soil, put in each hill. The corn was hoed the first time the 26th of June; the harrow had passed through it about two weeks before. The cultivator was used before hoeing. The soil, Mr. L. states, was worked in every instance in its hottest and driest state, excepting the cultivating, which was done as soon as light in the morning, to turn in a heavy dew. This acre produced less corn, by some twenty bushels, than any other acre for which premium was claimed; but in view of the character of the soil, the committee think the experiment meritorious, and hope many, possessed of exhausted fields, will be stimulated by the example of Mr. Litteljohn.

Mr. Manley prepared his land for a crop of onions, by spreading 13 loads of manure, chiefly from hog yard, and 14 bushels of ashes on fifty rods. The surface soil only stirred with the plough. Seed sown 16th of April. Fifteen days' work performed in weeding and tending; whole expense estimated at $38.

The statements of Messrs. Hill and Pratt show a judicious preparation of their fields for the production of potatoes. They probably would have had good success in a favorable season. A part of Mr. Hill's crop decayed before digging; this appeared not to be so in Mr. Pratt's field; whether the difference is to be accounted for in the character of the soils, which were manifestly unlike, or by the circumstance of the application of plaster on Mr. P's field, we cannot determine. We have supposed plaster a good preventive of disease; but recent communications on the subject seem to prove its inefficacy in several instances, and represent the malady in potatoes as beyond the reach of any remedial means within the present limits of our knowledge.

Ploughing Match.

There were eighteen entries for ploughing. Sixteen teams appeared, and entered the lists. The work was generally well done; some of it, we see not how it could much be improved. There was considerable difference in the several lands, which made it more difficult for the committee to satisfy themselves, in the award of the premiums. They, however, were unanimous in awarding the following :—

To Ira Conant, of Bridgewater, the first premium of .	$9 00
To Darius Dunbar, of do. the 2d, . . .	8 00
To George W. Wood, of Middleboro', the 3d, . .	7 00
To Elisha G. Leach, of Bridgewater, the 4th, . .	6 00
To Van R. Swift, of do. the 5th, and one vol. of N. E. Farmer, ...	5 00
To Ebenezer P. Richmond, of Halifax, the 6th, and one vol. of do., ...	4 00
To Charles Gurney, of N. Bridgewater, the 7th, and one vol. of the Boston Cultivator, . . .	3 00

To Chipman Porter of Halifax, Anthony Collamore of Pembroke, Philander Wood and Willard Wood of Bridgewater, one vol. of the Mass. Ploughman, each.

To Darius Dunbar, and Abram Washburn, 2d, of Bridgewater, one vol. of the N. E. Farmer, each.

To Adin Alger of Bridgewater, Nahum W. Tribou and Daniel Alden of Middleboro', each one vol. of the Boston Cultivator.

The committee would suggest to the trustees of the society, the propriety of requiring, in future years, the ploughman to drive the team himself in all cases.

Eight of the sixteen ploughs were of the make of Ruggles, Nourse & Mason; seven of Prouty & Mears; one of Martin's. Four of the cash premiums were awarded to those who used Prouty & Co.'s ploughs; three to those who used Ruggles, Nourse & Mason's.

Respectfully submitted. Per order,

JOS. KINGMAN, *Chairman.*

BRISTOL COUNTY AGRICULTURAL SOCIETY.

In the return of this Society, the Secretary, Samuel A. Dean, states, that "its exhibition was held in Taunton, October 8th, 1845, and has never been so well attended since the first organization of the Society. More entries were made for premiums than usual; and though no extra pains were taken by the committee of arrangements for a great *Show*, every department was much better sustained than ever before. The Society is gradually increasing in the number of its members, and with this increase comes ability to offer larger premiums for worthy objects."

No statements from successful claimants of premiums accompany the reports of committees. From the reports, the following extracts are taken.

Fruit and Vegetables.

The committee have great pleasure in stating that the exhibition of fruit and vegetables was very fine, much superior to that on former occasions of the kind, both in variety and quality, happily indicating a growing interest as well as skill in their culture. Yet the committee feel constrained to say, that the display of fruit and vegetables was nothing to what it should be; nothing to what it might be; and they flatter themselves that the time is not far distant when the exhibitions of the Bristol County Agricultural Society will compare favorably with those of her sister societies.

There were twenty-seven entries. The display of apples, by Jacob Dean, of Mansfield, consisting of no less than eighty-two varieties, tastefully arranged as they were, constituted one of the chief attractions of the Hall.

WM. R. BULLOCK, *Chairman.*

Manufactures.

Under the beneficent influence of a protective tariff, all branches of industry hitherto established throughout our territory have received an impulse; and a variety of new ones have sprung up within the past year or two, which have swelled beyond precedent the amount and variety of our manufactures. An ordinary interest even, in these exhibitions, on the part of the manufacturers and artisans of the county at the present time, would have crowded our show-tables with specimens, of which we should be proud.

But a small proportion of our people are aware of the vast amount and variety of manufactured articles which annually go forth from this county into the great commercial marts. In order to sustain these interests, it is all important that the people should be advised of them; and surely there can be no more simple and effectual way to impart information than by availing ourselves of the exhibitions of the Society. We believe it practicable to awaken a new interest in the matter, and trust that the Society, now that its numbers and means are enlarged, will take immediate measures for this end.

As compared with former exhibitions, that of to-day will not probably suffer; what is wanting in variety, is made up in quality. Amongst articles offered for premium produced in the county, E. Wilson, of Fall River, offered some diamond pointed gold pens, manufactured by himself, being the first article of the kind made in New England; they will compete with the celebrated pens of this description manufactured elsewhere. Messrs. Washburn & Robinson, of Taunton, also exhibited pens of their manufacture. The peculiarity of these pens is, that whilst they are of the same shape with metallic pens, they are made of the ordinary quill. A gothic tablet, wrought from marble by S. Warren, of Taunton, is a fine specimen of his art. Daniel Reed, of Easton, presented an improved slide dog for saw-mills, which the committee consider worthy of attention.

SAMUEL L. CROCKER, *Chairman.*

Ploughing Match.

There were nineteen ox teams entered, and were all on the ground. There were ten steer and horse teams entered, and were all on the ground.

Ox teams,	1st	premium to	John B. Newcomb, . . .	$6
"	2d	"	Elias Richmond, . . .	5
"	3d	"	Walker Richmond, . . .	4
"	4th	"	Alfred A. Hall, . . .	3
"	5th	"	Ebenezer Padelford. . .	2
Horse and steer teams,	1st	premium to	F. B. Dean, . .	4
"	2d	"	Luther L. Short, .	3
"	3d	"	Jacob Shepherd. .	2
Horse teams,	1st	premium to	N. B. Bliss, ...	4
"	2d	"	Henry N. Harvey, . .	3
"	3d	"	William Dean, . . .	2

Seven ploughs, Ruggles, Nourse & Mason's; three, Prouty & Mears'.

GEO. RANDALL, *Chairman.*

BARNSTABLE AGRICULTURAL SOCIETY.

The Annual meeting and Fair of this Society was held on Tuesday, October 28th, at Barnstable. Although the Society is yet in its infancy, the display of articles of manufacture, of fine animals, and of enthusiasm and zeal in the progress of the cause of improving the agriculture and domestic industry of our country, was such as to give a new impetus to the exertions of the friends of the Society, and to warrant the hope that the annual return of the day will do much to raise the standard of agricultural enterprise in Barnstable County. Those who have indulged in cavil at the ability of the old sand bank county to produce the necessaries of life, will, we think, after the exhibition of the 28th, be disposed to drop the subject, and let the citizens of Cape Cod continue to boast of their treasures hid in the sands.

The address before the Society, by the Rev. J. O. Choules, was listened to by a large audience with much satisfaction. The orator expatiated with much effect on the real dignity of those employments which require active physical exertion, and agriculture as the chief of these. He showed that the true wealth of a country existed alone in its lands and agricultural men. He held up the falsity of the notion, so generally prevalent, that it is honorable to live without labor, and insisted that these erroneous impressions should be effectually corrected by parents in the education of their children. The discourse was interesting and instructive.

The reports of the committees are not accompanied by any statements of claimants of premiums. From the Report on Produce, (Obed Brooks, Jr., Chairman of the Committee,) it appears that there was awarded—

To Joseph Bodfish, for the greatest quantity of Indian corn on one acre, 79½ bushels, ... $8

To Russell Hinckley, 2d premium, 75½ bushels on an acre, 6

To Nathan Jenkins, for 17 bushels barley, on 35 rods of land, ... 4

To Seth F. Nye, 1st premium, for English hay, having produced at one cutting 4 tons, 0 cwt. 1 qr. 27 lbs. on one acre, ... $8

To Eben Bacon, 2d premium, 3 tons, 0 cwt. 1 qr. 29 lbs. on one acre, ... 4

To David Hinckley, 1st premium, for carrots, 240 bushels on $\frac{1}{4}$ acre, ... 4

FARMS.

The farm of James H. Knowles, of Eastham, is one of the best cultivated and most productive in the county. His homestead contains 20 acres, two of which are covered with salt works. Besides this, he has two acres of swampy land, used for pasture, and salt meadow that produces annually about 12 tons of hay. The soil of his land is mostly a sandy loam, and under his management is very productive. The past season he had 8 acres under cultivation. The following statement of the amount raised thereon was furnished by a member of the Society, who visited Mr. Knowles's farm, to examine it for the purpose of making a report.

Produce of 8 acres under cultivation in 1845;—90 bushels of corn, 85 do. rye, 20 do. oats, 100 do. potatoes, 150 do. beets, and other roots.

On the remaining 12 acres, he cut 12 tons of English hay. From one acre, at the first mowing, 51 cwt.

" " " at the second " 30 " 66 lbs. or 4 tons, 166 lbs. of hay from one acre. He has pastured this year fifteen head of cattle and two horses.

The fact that Mr. Knowles manures highly, and is an excellent cultivator, explains the secret of his success. Besides the manure which he has made in his barn-yard and styes, the present year, he has manufactured 130 cords or 418 loads of compost manure, by stacking loam, muscles, mud, rockweed, peat and seaweed, and mixing therewith one cask of lime.

CHARLES H. BURSLEY,

Secretary B. C. A. Society.

ABSTRACT,

Showing for what objects Premiums were OFFERED *by the several Agricultural Societies in* 1845, *and the amounts of the same.*

SOCIETIES.	Bulls.	Milch Cows.	Heifers.	Working Oxen.	Greatest number of pairs of Working Oxen from any town.	Steers.	Fat Cattle.	Horses and Colts.	Sheep.	Swine.	Ploughing—double teams.	Ploughing—single ox teams.	Ploughing—horse teams.	Ploughing with horses or oxen.	Subsoil Ploughing.	Effects of Subsoil Ploughing.	Management of Farms.	Reclaiming Wet Meadows.	Subduing Bushes in Pastures.	Irrigation.	Experiments on Manures.	Turning in Crops as a manure.	Preparation of Compost manure.	Application of Compost manure.	Application of Sea Weeds.
Essex, ...	$18	$22	$12	$22	.	$28	$23	.	.	$24	$28	$20	$18	.	$18	.	$55	$25	.	$22	$25	$30	.	.	.
Middlesex, ...	20	21	30	30	.	29	14	.	.	30	28	28	.	.	.	.	72	40	.	.	.	.	$15	.	.
Worcester, ...	22	30	50	43	.	47	75	.	$13	33	.	55	.	.	.	.	.	.	.	.	.	.	.	.	.
Hampshire, Hampden and Franklin,	30	20	.	30	$60	31	20	$72	12	15	.	.	.	$40	.	.	.	.	.	.	.	.	.	.	.
Hampden, ...	11	21	15	28	28	15	19	35	11	20	.	.	.	27	4	.	22	10	.	.	8	9	.	.	.
Berkshire, ...	18	40	16	44	.	32	.	37	52	18	.	25	25	.	.	.	.	5	.	.	.	.	.	.	.
Plymouth, ...	15	10	19	24	.	14	27	.	.	.	.	42	.	.	.	$16	.	25	$16	.	17	.	16	$25	$16
Bristol, ...	23	24	9	21	.	21	37	8	10	12	9	20	9	.	.	.	25	.	.	.	15	.	.	.	.
Barnstable, ...	24	16	7	18	.	7	21	.	.	11	.	18	.	.	.	.	.	.	.	.	.	.	16	.	.

ABSTRACT—*Continued.*

SOCIETIES.	Butter.	Cheese.	Honey and Bee Hives.	Maple Sugar.	Grain Crops.	Root Crops.	Bean Crop.	Hay Crop.	Hay Seed.	Fruits and Vegetables.	Cranberries.	Forest Trees.	Fruit Trees.	Live Fences.	Mulberry Trees and Silk.	Cocoons and Silk.	Introduction of new and valuable Grass.	Comparative value of Crops as food for cattle.	Fattening Cattle and Swine.	Experiments to determine proper distances at which to plant corn and potatoes.	Implements and Inventions.	Domestic Manufactures.	Discretionary Premiums.	WHOLE AMOUNT.
Essex,	$48	.	.	.	$48	$30	.	.	.	$40	.	$30	$20	$30	$25	.	.	$10	$15	.	$10	$94	.	$820
Middlesex,	10	.	.	.	42	23	.	.	.	.	$10	93	73	.	60	.	.	.	.	.	10	48	$50	776
Worcester,	20	$35	.	.	.	41	.	.	.	.	.	30	.	.	.	.	.	.	.	.	.	67	50	611
Hampshire, Hampden and Franklin,	6	6	.	.	20	2	.	.	.	.	.	10	10	.	.	.	.	.	.	.	.	40	.	424
Hampden,	10	3	.	.	20	12	.	.	.	.	.	10	.	.	.	.	.	14	5	.	.	40	75	472
Berkshire,	12	12	$5	$7	110	18	.	.	$5	7	.	.	.	.	.	.	.	.	.	$14	.	112	.	614
Plymouth,	20	20	.	.	67	52	10	.	.	25	.	100	.	.	.	$12	.	.	.	16	15	125	.	744
Bristol,	15	14	14	.	45	27	8	$9	.	14	.	22	.	.	.	.	$8	.	.	.	.	100	.	519
Barnstable,	10	6	.	.	21	21	.	15	.	5	8	5	3	.	.	.	.	.	.	.	.	50	.	282

ABSTRACT,

Showing for what objects Premiums and Gratuities were AWARDED *by the several Agricultural Societies in* 1845, *and the amounts of the same.**

SOCIETIES.	Bulls.	Milch Cows.	Heifers.	Working Oxen.	Greatest number of pairs of Working Oxen from any town	Steers.	Fat Cattle.	Horses and Colts.	Sheep.	Swine.	Ploughing—double teams.	Ploughing—single ox teams.	Ploughing—horse teams.	Ploughing with horses or oxen.	Subsoil Ploughing.	Effects of Subsoil Ploughing.	Management of Farms.	Reclaiming Wet Meadows.	Subduing Bushes in Pastures.	Irrigation.	Experiments on Manures.	Turning in Crops as a manure.	Preparation of Compost manure.	Application of Compost manure.	Application of Sea Weeds.
Essex,	$18	$20	.	$22	.	$28	$8	.	.	$24	$28	$20	$18	.	$10	.	$53	$15	.	.	.	.	.	.	.
Middlesex,	20	21	$30	30	.	27	18	.	.	30	28	28	.	.	.	.	72	40	.	.	.	.	$10	.	.
Worcester,	22	27	46	43	.	47	58	.	$13	35	.	55	.	.	.	.	.	.	.	.	.	.	.	.	.
Hampshire, Hampden and Franklin,	32	16	6	32	$60	30	.	$73	12	12	.	.	.	$46	.	.	.	.	.	.	.	.	.	.	.
Hampden,	14	18	15	28	28	24	18	.	11	9	.	.	.	29	.	.	.	.	.	.	.	.	.	.	.
Berkshire,	18	40	16	44	.	32	.	37	52	14	.	25	25	.	.	.	.	9	.	.	.	.	.	.	.
Plymouth,	15	10	19	24	.	14	27	.	.	.	.	12	.	.	.	$16	.	29	$14	.	$10	.	5	.	$4
Bristol,	27	10	17	24	.	25	29	8	10	14	10	30	12	.	.	.	.	.	.	.	.	.	.	.	.
Barnstable,	27	16	7	18	.	7	18	.	.	11	.	18	.	.	.	.	.	.	.	.	.	.	.	.	.

* There were also offered and awarded as premiums, by several of the Societies, copies of Colman's European Agriculture, Washington's Letters on Agriculture, the New England Farmer, Massachusetts Ploughman, and Boston Cultivator.

ABSTRACT—*Continued.*

SOCIETIES.	Butter.	Cheese.	Honey and Bee Hives.	Maple Sugar.	Grain Crops.	Root Crops.	Bean Crop.	Hay Crop.	Hay Seed.	Fruits and Vegetables.	Cranberries.	Forest Trees.	Fruit Trees.	Live Fences.	Mulberry Trees and Silk.	Cocoons and Silk.	Introduction of new and valuable Grass.	Comparative value of Crops as food for cattle.	Fattening Cattle and Swine.	Experiments to determine proper distances at which to plant corn and potatoes.	Implements and Inventions.	Domestic Manufactures.	WHOLE AMOUNT.
Essex,	$48	.	.	.	$8	$9	.	.	.	$30	.	.	$20	$20	.	.	.	.	.	.	.	$123	$528
Middlesex,	10	.	.	.	.	.	.	.	.	51	.	.	68	.	.	.	.	.	.	.	$10	47	540
Worcester,	17	$35	.	.	.	13	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	55	466
Hampshire, Hampden and Franklin,	9	5	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	97	430
Hampden,	10	4	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	27	34	269
Berkshire,	12	12	$8	$4	113	20	.	.	$5	7	.	.	.	.	.	.	.	.	.	.	.	121	614
Plymouth,	18	20	.	.	56	19	$6	.	.	17	.	$80	.	.	.	$5	.	.	.	.	7	134	591
Bristol,	16	14	14	.	.	.	.	.	.	27	.	.	.	.	.	.	.	.	.	.	.	85	372
Barnstable,	10	6	.	.	18	17	.	$12	.	4	$8	.	3	.	.	.	.	.	.	.	.	34	234

APPENDIX.

SELECTIONS FROM ADDRESSES

TO

AGRICULTURAL SOCIETIES.

Intellectual and Physical Culture as connected with Agriculture.

[*Extract from an Address by* Rev. E. M. Stone, *at the last Fair of the Essex Agricultural Society.*]

I pass to consider a want of our times. This is, attractive agricultural reading for the young. Man is, to no small extent, the creature of early impressions; and the reading of childhood often gives complexion to the character, and directs the aims, of manhood. Many a lad, not remarkable for the preponderance of a particular propensity, has been led to the choice of after pursuits, by the books he has perused. The life of "Jack Sheppard" has made many a villain; of Howard, many a philanthropist. One reads the life of Franklin, and aspires to the honors of a philosopher, or to lead public sentiment through the press. Another peruses the life of Washington, and makes him the model of his public career. Art, Science, Law, Medicine, and Theology, are indebted to the reading of childhood for many of their brightest ornaments.

Now what I wish, is, to make this exercise auxiliary to Agriculture; through it, to awaken and deepen a love of the beautiful in the works of creation; and by it, to wed many an ambitious spirit to the cultivation of the soil. I wish to see the subject of Agriculture hold a place in our school books, as

prominent, at least, as that of War. If the spirit of the latter is to be fostered where young ideas bud, and often fruit, by the charms of poetry, it cannot be asking too much that the praises of peaceful Agriculture be said in sober prose. The relation which the latter holds to the former, in some of our school books, affords little hope for an improved public sentiment while they continue in popular use. I was induced, not long ago, to examine a reading book for the upper class in schools, read daily by tens of thousands of youth, with a view to ascertain how far its pages contributed to win the young heart to your honorable calling. I found eloquent thoughts on the landing of the Pilgrim Fathers, and a humorous account of The fat Actor and the Rustic. There were mirth-stirring pieces, and pieces of sober devotion. There were the Battle of Hohenlinden, and Voices in the Church Yard; Lochiel's Warning, and a Soliloquy on the immortality of the soul; the Battle of Flodden Field, and Dr. Slop meeting Obadiah; the Pleasures of a cultivated imagination, and a New Mode of Fishing; all excellent in their way. But the only piece I discovered that could be properly placed in the category of Agriculture, was Irving's burlesque on a Yankee Farmer, who builds a palace of pine boards large enough for a parish church, which he never finishes, "soon grows tired of a spot where there is no longer room for improvement, sells his farm, his air castle, petticoat windows and all, re-loads his cart, shoulders his axe, puts himself at the head of his family, and wanders away in search of new lands, again to fell trees, again to clear cornfields, again to build shingle palaces, and again to sell off and wander."

This description may doubtless afford amusement to the young tyro, when his self-invented resources fail. It may form an agreeable relief to the puzzles of the black-board, or the conjugations of Lindley Murray, but that it will inspire a farmer's son with respect for farming, or create in him a preference for his father's business, I do not believe. To counteract, then, the unfavorable influences of the school room, in this particular, our school books should contain a reasonable proportion of reading on agricultural and kindred topics. Every farmer

should take an agricultural newspaper, that his sons, as well as himself, may become familiar with the most improved methods of husbandry in every part of the world. And books, in poetry and in prose, descriptive of rural scenes, of the advantages, the moral influences, and the social pleasures of agricultural life, should be multiplied. In this way, would I have every farmer's son, and every other man's son, receive with the first rudiments of education, worthy impressions of this branch of industry; impressions that will deepen with his years, and that will secure a due share of the muscle and mind of the rising generation to a pursuit so rich in its resources of enjoyment, and so certain in its results.

There is frequent complaint among farmers, that their sons early manifest a distaste for agriculture; that as soon as they are of an age to be useful, they seek other employments, and leave them to manage the homestead under the disadvantage of hired assistance. I do not suppose that every farmer's son will make, or that it is necessary that every farmer's son should become, a farmer. The trades, arts, sciences and learned professions have a claim on youth. There are "diversities of operations," that require a division of labor. But still, I believe, by the process I have suggested, and another I shall now speak of, the evil of which farmers complain would be in a great measure obviated.

Besides, then, furnishing our youth with "Rollo" and "Lucy Books" of agriculture,—besides enriching their minds with the beauties of Bloomfield, Gay, Thompson, Cowper, Burns, and other gems of verse,—I would have every farmer educate that son that discovers the best natural taste and capacity for farming, for a farmer. That is, the conversation and counsel of the fireside, the instructions of the field, and the studies of the school, should all be directed with reference to qualifying him for the practical duties of the farm. Why not? Youth are educated for lawyers, physicians and merchants. Why not, then, educate them for farmers, when the influences of education do so much to develop or create attachments to particular pursuits? If, as was suggested in the able address before you last year, the elements of agriculture were made a branch of

study in our common schools, the best results might be confidently anticipated. Possibly some may consider this a useless appendage to the studies now pursued. They may think that a boy can learn enough of agriculture on the farm, without the study of books. But if I have rightly estimated the influence of books on the choice of pursuits, then this study, so far from being useless, will be found an important auxiliary to an interest from which other interests are annually abstracting much of the best talent.

It is Mind that gives man his supremacy. It is developed intellect that lifts one man above another, and procures for the individual unblest with this world's abundance, respect, honor, influence and consideration that wealth can never purchase. I would have the humblest farmer's boy, by education, raised to a level with his more favored fellow. I would give him a fair start in the world; a fair chance to be *felt*, through the influence of his talents, in the assembly of his townsmen, or in the halls of legislation. I would have every farmer's son know enough of chemistry, to analyze soils, and prepare composts; enough of geology, to understand the origin and nature of soils; enough of botany, to understand the structure of plants and flowers, and to classify them; enough of natural history, to know the habits of the animal, feathered and insect tribes; and enough of physiology, to recognize the laws of health, and the secret of prolonged life. In a word, I would have him a perfect master of his noble calling, so far as depends on education. And it is for this reason, that I desire to see our common schools, where the majority of our children, and nearly every farmer's son receives his entire education, fostered with increasing care, and made equal to the highest intellectual cultivation that stops short of the university. I insist upon this high standard, because intelligent labor is better and cheaper for those who hire, than ignorant; because I wish to see agriculture placed in its true position before the world, and dignified in the eyes of its own sons; because I would banish forever the false notion, that physical toil is incompatible with intellectual culture; and because I would not have withdrawn from the plough, one ray of the glory that encircled it, when

Cincinnatus quitted it to command the Roman armies, or our own Washington, to be the saviour of his country.

In the remarks now offered, I have made no reference to farmers' daughters. I would not, from this cause, be supposed to cherish indifference to their intellectual improvement. Far from it. The advantages I demand for the son, I claim for the daughter. When, in the olden time, a prayer was offered, "that our sons may be as plants grown up in their youth," it was added, "that our daughters may be as corner stones, *polished* after the similitude of a palace." In my plea for education, I can make no distinction in the sexes that God has not made. I believe the best education, and the fullest development of their intellectual powers, that circumstances will permit, is the right of both, of the sister as much as the brother. If knowledge is a blessing to the latter, it can be nothing less to the former. The purpose of female education, as is justly remarked by a successful female educator, is to lead the sex "in the path of duty; to make better daughters, wives and mothers; and better to qualify them for usefulness in every path within the sphere of their exertions. The true object of education, is not to lead woman from her own proper sphere, but to qualify her for the better discharge of those duties which lie within it. By being enabled to see more clearly the peculiar obligations which devolve upon them in their various relations, and to discern the boundary between their duties and those of the other sex, they will be restrained from indelicately passing the barrier which the Almighty himself, in the peculiarities of physical as well as mental constitution, has established between them. Females are not called upon to lead armies, make and execute laws, or to preside over public safety." But they may be called to equally important and responsible duties. They "may be called upon to preside over the domestic circle; to regulate families by their wisdom, and to guide and enlighten the youthful mind. In the proper performance of these duties, they will need all that clearness of reason, and solidity of judgment, to which a thorough and well conducted education may conduce. No law, human or divine, forbids that the female mind should seek to penetrate science," or that it should be

accomplished in any of the arts that constitute a polite education.

Mr. Colman, in his "European Agriculture," has described an English lady of highly cultivated intellect and rare accomplishments, who, living in the midst of gilded halls and hosts of liveried servants, was as familiar with the dairy and the entire system of husbandry, as she was with the elegant luxuries of life, and whose visits to the barn and piggery were as unrestrained as to the library. Now this beautiful ideal may, to a certain extent, be realized by every farmer's wife and daughter. I maintain, there is entire congruity between a cultivated intellect and polished manners, and the performance of the commonest duties of domestic life; between, if you please, a knowledge of the Latin classics and making a cheese, of the piano and the spinning wheel, of embroidery and making a pudding, of algebra and darning a stocking. That woman is worthy of admiration, as she will always command it, who combines a thorough knowledge of the details of house-keeping with the charm of intellectual and personal accomplishments. It is these last that dignify labor, and impart to domestic life a true zest, and where we see them in this combination, we are prompted to apply the compliment paid by Dr. Johnson to Mrs. M'Kenzie: "She is the most accomplished lady I found in the Highlands; she knows French, music and drawing; sews neatly; makes shell-work; *and can milk cows.*"

There is one other topic kindred to this, which I should like to treat at length, but to which my limits will permit only a brief reference. I mean the more exact attention that is due to the *rights of the intellectual nature, and to the laws of physical existence.* The careful observer will not have failed to discover, that, even in New England, these points have not commanded the consideration they deserve. As a people, we are every year more and more departing from a sound principle of health and happiness, by overtaxing the physical powers, and withholding what is justly due to the intellect. We push the former to the extreme verge of ability, and leave the other to amble on at leisure. Life is hurried and excited, and a constant war is waged upon the restorative powers of nature.

These statements may seem strange, but they are true, and, therefore, should be exhibited. Shakespeare makes one of his characters say,

> "So many hours must I tend my flock;
> So many hours must I take my rest;
> So many hours must I *contemplate;*
> So many hours must I sport myself."

The soundness of the principles unfolded in this quotation is self-evident. In man's present state, labor is necessary. It is an axiom of inspired authority, that *if any will not work, neither shall they eat.* Under the restraints which Christianity imposes, the eating of one's bread in the sweat of his brow is a blessing. But man needs time to wind up the machinery of animal life, to regather the dissipated energies. His higher nature needs the indulgence of intellectual pursuits. Toil, rest, recreation and reading or meditation, in proper combination, are essential to healthy and happy living, to the perfect development of the true man.

But where, at the present day, do we see any approximation to this division of time, among what are technically denominated the laboring classes"? If we examine the condition of the thousands of unmarried females and widowed mothers, who ply their needles in our cities and large towns for a livelihood, we find it is

> "Work—work—work!
> Till the brain begins to swim;
> Work—work—work!
> Till the eyes are heavy and dim!
> Seam and gusset and band,
> Band, and gusset and seam,
> Till over the buttons they fall asleep,
> And sow them on in a dream."

And how is it with the agricultural population? A large proportion of this class toil sixteen hours out of the twenty-four, a longer period of continuous exertion than is required of the slave, with whose brutalized condition we so justly sympathize, leaving not a single hour (if eight be given to repose) for recreation, social intercourse, or self-culture. Even the winter, nature's restorative, no longer, as formerly, brings

relaxation to the farmer. "He works," it has been said, "as hard as he can in the summer, and in the winter, a great deal harder." And the good old fashioned neighborhood parties of our childhood, so promotive of fraternal sympathies, have been banished from the circle of rural life, and find a place only in the "pleasant memories" of other days.

But more than this. We "laboring people" of New England do not take time even to eat. We are the only people, I believe, on the face of the earth, blessed with a sufficiency of food, that are so parsimonious of minutes in this respect. Our food is *bolted*, not masticated, to the manifest injury of the digestive organs, and, when we have thus replenished the stomach, we hasten to our toil, to recover, if possible, the moments wasted in this exercise. And what is the result of these and collateral abuses of the compound nature? An enfeebled race of men and women. We look in vain, among the rising generation, for the robust constitutions, and promise of the health and long life, that blessed our ancestors; and we shall continue to look in vain while the work of two years is crowded into one. In placing man here, it was no part of the Divine plan, that he should thus overreach himself, that he should commit moral, intellectual and physical suicide. If God gave him broad acres to cultivate, he also gave him a mind and body to improve, and he gave him time enough, when properly allotted, to do both.

Of all active employments, farming is, perhaps, most congenial to self-culture. In some mechanical pursuits, success often depends on the concentration of the mind to a single point. The nice calculations that enter into a new invention, or an improvement of an old one, forbid attention to any subject out of that particular line. But it is otherwise with the farmer. There are many hours, in which he may reflect and meditate on topics foreign to his business, without impeding it. He can carry into the field, and digest the contents of a valuable book, while turning the furrow or cultivating the crop, and feel refreshed by the exercise. And if, as 'tis said, "an empty brain is the devil's workshop," where all sorts of mischief are forged, he is the wisest man, and in the safest condition, who goes to his daily employ well provided with matter for profitable thought.

Why, then, should not this truth be kept constantly in view? Why should not every farmer, and every farmer's wife, have time for moral and intellectual improvement? Why should they not have a choice collection of books, small though it may be, and time to peruse them? Why should not the one be familiar with the best works on Agriculture and Political Economy, and the other with the productions of Moore, Edgeworth, Sigourney and Beecher? Nay, why should not the great truths of Revelation, those that unveil eternity, and impart lustre to the soul's destiny, occupy an occasional hour of undistracted meditation, of inspection as anxious as was ever devoted to "the contents of a rich man's last will and testament?"

Industry and enterprise I profoundly venerate, and feel myself bound to say and do what I can to give them a healthy stimulus. But I cannot close my eyes to the evils of their *abuse*. All excess is hurtful, and to be deplored. And when I hear men say, as I frequently do, that they should be glad to read, but cannot find time, when I hear mothers speak with deep feeling of maternal responsibilities, and mourn that they are debarred, by the stern demands of toil, the aids of deliberate reading and calm thinking, in discharging the noblest and holiest duties of life, my heart is pained, and I cannot escape the conviction that something wrong is mingled with the present order of things. And when I see both sexes deeply and prematurely marked with the lines of excessive care, debasing their better natures with the grossness of earth,—when, in all parts of our glorious Commonwealth, I see men, and women too, neglecting the Sabbath, absenting themselves from the house of worship, because, as they say, they are prostrated by the toils of the week,—my soul is grieved beyond expression. I tremble in view of the consequences they are accumulating to themselves, the injurious influence of their example on their offspring, and the disease they are engendering in the morals of the community.

The causes of this condition of things have been variously assigned. The evil is attributed to avarice, an excessive haste to be rich, a finical love of show, a passion for dress that ordinary labor cannot support, extravagant indulgence of artificial wants, envious emulation of the rich, ignoble competi-

tion in business, making wealth the only standard of worth, and the *selfishness* that either, or all of these causes combined, have nurtured in the human breast. But from whatever source the evil has sprung, the necessity of its reform is obvious. The best interests of our community demand it.

I am aware that it is often easier to point out an evil, than it is to suggest an effectual remedy. Fortunately, however, a specific is at hand, not, indeed, in the re-organization of society, but in the universal application of Christian principles to society as it now exists. I perceive no occasion for finding fault with the social institutions of which God is the founder, though man may be justly censured for his abuse of them. Nor has necessity arisen for their destruction, that the evils which sin and ignorance have forced into them may be reached. If the temple is defiled, let it be purified, not razed to the ground. If false notions and wrong practices exist in society, let them be met and removed by the correct views and right practices of Christianity. Practical Christianity, divested of mysticism and superstition, is the true remedy for all the ills of the social state. If men look into its pure ethics, they will learn that avarice is sin, and selfishness antagonism with God. They will learn that true living consists in subordinating the passions, moderating the desires, abjuring the servitude and idolatry of fashion, cultivating the social relations, and esteeming Mind of more worth than Matter, and Heaven more desirable than Earth. Let these truths be reduced to practice by both sexes, and justice will be done to the moral, physical and intellectual natures. Time will be so rightly divided, that labor, rest, recreation and intellectual culture will each occupy its due proportion, and a healthy equilibrium be maintained.

The Profits of Agriculture.

[*Extract from an Address by the* Honorable Asahel Foote, Jr., *at the last Fair of the Berkshire Agricultural Society.*]

Agriculture is profitable, in that it furnishes to the farmer an honorable occupation.

* * * * * *

It is a fact that cannot escape the diligent observer of men, that occupation, throughout the wide circle of human employments, has an influence more or less direct and controlling, on human character; and that in the life of a farmer, especially, there is a combination of circumstances which strongly tends to form a character somewhat unique. Among these circumstances may be named that intimate connexion which his occupation has with the great operations of nature; the directness of his dependence for subsistence on the bounties of the Creator; his remoteness from condensed society, from artificial life, and from the follies and vices attendant thereon; his exemption from the lures of ambition, the wiles of speculation, and the subtleties of trade; the simplicity and benevolence of his intercourse with his fellow-men, and those attachments to the soil which imperceptibly grow up into a love of country; all of which conspire to beget and nourish in him those moral qualities which ever form "the very soul of honor."

But agriculture has other claims to be entitled honorable. It has ever been, and the history of our own country is a sufficient voucher for the truth as it relates to recent times, the great herald and agent of civilization. Where can that happy land be pointed to on earth, adorned with all the charms, and sharing all the benefits of refined life, that does not owe its elevation mainly to the humanizing arts of the husbandman? What is it but the cultivator's axe, that, in every age, has circumscribed the range of the savage, and extended the limits of civilized life? What is it but the cultivator's plough, that has changed the gloomy wilderness into a smiling garden, and converted the abodes of wild beasts into the dwelling-places of men? Who

was it but a feeble band of tillers of the soil,—feeble in numbers and in physical resources, but mighty in spirit,—that began, two centuries ago, on Plymouth Rock, to lay the broad foundations of this great Republic? And who has it been but their successors in employment, that have pushed that mighty enterprise from point to point, until, from Plymouth Rock to the Rocky Mountains, the last traces of savage life have disappeared, and the wide expanse between become studded with villages and cities, and overspread with an enlightened, virtuous and happy population, basking in the full sunshine of freedom, and blest with all that renders life desirable? And what is it but the Genius of Agriculture, disseminating and equalizing among the earthwide human family the varied bounties of the common mother of mankind, that,—setting at defiance all the laws of nature, overarching the mighty river, casting down the mountain summits, raising up the interjacent vallies, and whitening every ocean, sea, and lake with canvass,—has not only intersected every land with navigable waters and with roads of iron, but bound together, in commercial ties, the most distant cities and kingdoms, and even brought the ends of the earth into proximity? And what is it, but the same beneficent agent, that is destined (under the guidance of our holy religion), by extending the arts of peace, and linking all the tribes of men together in one grand community of interests, to cause the nations ultimately to "beat their swords into plough-shares, and their spears into pruning-hooks," and thus to become the great pacificator of the globe? And is there nothing honorable in achievements like these? The brow of him who comes in triumph from the field of conflict and of carnage, is accustomed to be wreathed with laurels; why not the brow of him who triumphs in a bloodless conquest over nature, and who turns that conquest, not to purposes of tyranny, but to the elevation of his species?

Agriculture is profitable, in that it fully meets the wants of man's physical nature. I make no pretensions to physiological science, but I think its professors will bear me out in the following proposition, viz: that the first and most important demand of our physical nature is *exercise*, exercise free and abundant,

and taken in the open air: the second, *food*, food plain and simple, but nutricious, and in sufficient quantity; and third, *rest*, rest taken at proper intervals, and during those hours which the Creator has indicated for that purpose, in the primary divisions of time into day and night. And where is it possible for these conditions of health and of vigor, not to say of comfort and of happiness, to be so fully met as in the life of the farmer? Called forth by the cares of his occupation at the dawn of day, the active exercises and the pure invigorating breezes of the morning, give to him a relish quite unknown to the man of sedentary life, for the plain and homely, perhaps, but fresh and wholesome provisions of his table, of which he partakes with the greater pleasure from the fact that they are the immediate rewards of his own honest industry. With strength renewed for the renewal of his toil, he "goeth forth unto his work, and to his labors until the evening," when, alike prepared for the enjoyment of repose, "tired nature's sweet restorer, balmy sleep," comes without wooing to his pillow, repairs his wasted energies, and fits him to resume the routine of his daily employments. This very regularity of the farmer's habits, in the taking of exercise, food and rest, cannot fail to exert upon his physical nature the most salutary influence; and to this character of his habits, in connection with that cheerfulness of spirit, which it is the tendency of every scene around him to inspire, it is doubtless owing, that we ever find him the image of health and vigor, his complexion fresh and ruddy, his step firm and elastic, and all his physical powers in their fullest development. And these are just the results which reason would lead us to anticipate, when we consider the human organization in its manifest adaptation to the outward circumstances of our being. The lungs, that artificial *life-bellows*, if I may so denominate it, whose unceasing office is to fan the vital flame, was adapted by the Great Artificer to the pure air of heaven, in which the farmer "lives, moves and has his being," and all the human frame-work adjusted to those ever-varied exercises of the field, which give to it compactness, symmetry and strength, and which qualify man for the fullest enjoyment of all the innocent pleasures for which his nature is fitted.

Agriculture, rightly pursued, is eminently conducive to mental enlargement.

No sentiment of mankind is more erroneous than that (and it is by no means uncommon), which supposes, not only that the practice of agriculture is unfriendly to intellectual culture, but that to the cultivator of the soil such culture is unnecessary. In opposition to this sentiment, so dishonorable to the farmer, I declare it as my settled conviction, that in no occupation of life is knowledge so varied and extensively demanded, and that in no other profession,—those, perhaps, excepted, which make the acquisition of knowledge their exclusive object of pursuit,—are there presented so great advantages and so strong inducements for the intellectual cultivation of the higher faculties. True it is, that to all other classes of men, the sources of knowledge are equally open; but, while this is true, it is not to be supposed that men will devote themselves to the attainment of knowledge which is not to be of practical utility in the pursuit of their chosen avocations. And in this respect the cultivator of the soil has a manifest advantage over the tradesman, the artificer, and the professional man; for, while the knowledge requisite in their pursuits is in general confined to particular subjects, limited in number, the knowledge applicable to the business of the farmer is varied as are the objects of his pursuit, and the circumstances of nature on which the successful prosecution of those objects depends. So that, in addition to the fact, that to him, as well as to others, every common source of knowledge is open, he has a stimulus unknown to other men to urge him on to the pursuit of universal science, and especially to make him at the oracle of Nature an universal inquirer.

But why should it, by any one, be thought absurd that agriculture should admit of improvement; that such improvement should result from the adoption of certain fixed principles; and that for those principles we should be indebted to science, or a true knowledge of nature? We believe the universe to have been established by an Infinite Intelligence, and we know that every portion of it is subjected to order and system. The world in which we live is a world of laws; of laws so extensive, and yet so minute in their application, that not a particle of matter

escapes their all-pervading governance. It is in subordination to these laws that, "while the earth remaineth, seed-time and harvest, cold and heat, summer and winter, day and night, shall not cease;" in subordination to these, that all the periodical changes and uniform transformations, which we witness in nature around us, take place; in subordination to these laws that the elements conspire to effect the germination, increase and maturity of every plant that rises from the ground, and that the vegetable productions of the earth sustain the life, promote the growth, and minister to the comfort and happiness of the animal creation; and neither vegetable nor animal perfection can consist with the violation of these laws. Hence the evident importance of a knowledge of these laws to man, and especially to the husbandman, whose work it is, as received from the hand of his Maker, "to till the ground," to preside over the animal and vegetable kingdoms, and to provide for the sustenance of the human family. These all-pervading laws of which I speak, when classified and grouped together, constitute what are called the "Natural Sciences." For a farmer to study the natural sciences, therefore, is but to acquaint himself with those laws of nature to which all his operations are subject, and on whose observance all his success must forever depend.

How reasonable, then, nay, how important, how absolutely indispensable, to the perfection of his art, that the tiller of the soil should be a man of science; not a "book farmer," if any one dislike that epithet, but a farmer who diligently consults the book of nature, and instead of submitting himself to the guidance of sightless, mindless, stumbling chance, is guided by fixed principles; principles which cannot mislead him; by laws as immutable as are the foundations of the earth itself. And how does this view of the subject cast contempt upon that shallow estimate which has sometimes been put upon the farmer's art; and how does it rebuke the narrow-minded policy of those governments, which hold out no encouragement for the improvement of this art of arts, and which would leave the tiller of the soil to occupy a common level with the brutes he drives before the plough.

Agriculture is profitable, in that it has a direct tendency to the moral improvement of man.

To this end it contributes, in the first place, negatively, by locating the farmer in the country, and thus withdrawing him from all those influences unfriendly to virtue, which are known to be ever multiplied and strengthened in proportion as men become congregated in masses, and the means of animal gratification are concentrated; and, in the second place, positively, by the direct tendency of his position and employment to promote simplicity of manners, regularity of habits, moderation in his desires and in the indulgence of his appetites, and to inspire him with sentiments of justice, patriotism, philanthropy, and piety. Depending for subsistence, not upon the gains of commerce, not upon the success with which he can drive a rival trade, or compete with his fellows in professional life, but upon the direct rewards of Providence to his honest industry, he is exempted in a good degree from those trials to temper and to integrity, and from those temptations to avarice and venality, to over-reaching and injustice, to jealousy, envy, hatred, and strife, which often prove too strong for the virtue of other men. His greatest interest lying in the soil which he cultivates, the love of country is with him but a natural sentiment; his only rivalry with his fellow-men being that of kind offices, he is under no temptation to indulge the feelings of misanthropy; and, led by his employment constantly to "look through nature up to nature's God," he is restrained from infidelity and irreligion.

The influence of these circumstances on the moral character of the agricultural class is not imaginary. Jefferson, who was a shrewd observer of men, has declared, that, "generally speaking, the proportion which other citizens bear in the State to that of husbandmen, is the proportion of its unsound and unhealthy parts, and is a good enough barometer by which to measure its degree of corruption;" and it is a matter of notoriety, that, while the agricultural class composes the very great majority of our population, the proportion which it furnishes to our pauper and criminal lists is very small indeed.

The pursuit of agriculture is profitable, considered as a source of pecuniary advantage.

It is not to be pretended that agriculture holds out any very great inducement to those "that make haste to be rich." Sudden wealth is seldom among its achievements. But, though its

gains be slow, they are, in general, more sure than those of other pursuits, for which the simple reason is sufficient, that, the products of agricultural labor consisting of the prime necessaries of life, the farmer is always sure of a market for his surplus at some price, and cannot ultimately fail of the reward of his labors. True, his annual net profits may not be large; but, if proper industry be practised out of doors, and due economy within, it is seldom that the farmer will not be able, at the end of the year, to "report progress;" and "the farmer," says Buel, "who secures an annual and increasing income by his industry, though it be small in the outset, is much more likely to become ultimately rich, than the man of almost any other profession in life." Nothing is more common than for young men, ambitious of making their fortunes, to imagine, that, in order to attain with certainty the object of their wishes, they must betake themselves to mercantile pursuits. But well-authenticated facts go to show, that, in giving this direction to their pursuits, they are very likely to be disappointed; for it appears, from reliable sources, that, "in our country, every twenty years witnesses the insolvency of the whole aggregate trading community;" and Gen. Dearborn has stated, as the result of accurate investigation, that, "of those who have gained their livelihood by selling, ninety-seven out of every one hundred have failed, or died insolvent."

Of the average per centum of profit realized by the aggregate of farmers on the capital invested in their business, we have not perhaps sufficient data upon which to base a very certain estimate. It is supposed, however, by those best qualified to give an opinion on the subject, not to fall short of 6 to 8 per cent. But, while the average may not exceed, or possibly may fall below this estimate, it is well known, that, under skilful management, a profit much greater than this is often realized, amounting, in given instances, to 15, 20, and even 30 per cent. The greater the skill employed, the greater, of course, will be the profit, and *vice versâ*.

In Great Britain, notwithstanding that her soil, by nature inferior to ours, has been subjected to a thousand croppings, to such a state of perfection has her agriculture, by the aids of science, been brought, we are told, that "five millions, of all

ages, produce annually, from her limited soil, $700,000,000 worth of agricultural produce, averaging about $140 to every man, woman, and child of her agricultural population."

Let American farmers then emulate the examples of improvement set them on the other side of the waters; let them call to their aid the lights of science, as the farmers of the old world are doing, and bring up their art, by every available means, to that state of perfection of which it is capable, and, instead of being dissatisfied with the profits of their occupation, and casting a wishful eye upon other pursuits, they will soon find themselves ardent in their attachment to agriculture.

The Mutual Dependence between Agriculture and other Pursuits.

[*An Address delivered before the Agricultural Societies of Hampshire and Hampden Counties, in Massachusetts, at their Anniversary Fairs, in Northampton and Springfield, in October*, 1845, *by* Rev. Edward Hitchcock, LL. D., *President of Amherst College.*]

"Omnes artes, quæ ad humanitatem pertinent, habent quoddam commune vinculum, et quasi cognatione quâdam inter se continentur."—*Cicero pro Archia.*

You will doubtless think, Gentlemen, that this is a strange introduction to an Agricultural Address; and that I still imagine myself to be within college walls, or, by mesmeric retrospection, to be standing before an ancient Roman audience: for the words which I have quoted were once uttered by the great Roman orator, Cicero. And I have placed them at the head of my remarks on this occasion, because they contain essentially the subject which I wish to bring before you. It may, indeed, seem pedantic,—certainly it is somewhat quaint,—to repeat the original. But I have observed that quaintness is sometimes a great help to the memory, and makes an important sentiment more impressive. And these are my sole reasons for quoting the very words of Cicero. Their meaning in English is this:

"All the arts, cultivated among men, are linked together by a certain common bond and relationship."

Cicero had undertaken to defend the poet Archias against a prosecution in a court of justice, and, as a preliminary, he undertook to show that poetry was not an art isolated from all other pursuits, but formed one of the links of the golden chain that binds all human pursuits together. I wish to show the same in respect to agriculture. Nay, I shall not be satisfied by showing that it is related to all other pursuits, but that there is such a relation as implies a mutual dependence; so that they cannot exist in a healthy state independent of one another. I must therefore modify somewhat, and make more specific, the

sentiment of Cicero. I maintain, that *there is a mutual dependence between agriculture and the other important pursuits and interests of society.*

I might have derived this principle from a higher authority than Cicero; for Solomon has said, "the profit of the earth is for all; the king himself is served by the field"; as much as to say, no class of the community, from the lowest to the highest, can live independent of agriculture. And on the other hand, it is easy to show that agriculture is dependent in a great measure, for its successful cultivation, upon other pursuits. To prove and illustrate both parts of this proposition, will be my object on this occasion.

The mutual dependence between the arts, manufactures, commerce and agriculture, will need but a few words of illustration, because familiar to all. In order to success in any important pursuit, it is necessary that a man should give to it an undivided, constant, and nearly exclusive attention. Neither the farmer, mechanic, or merchant, can be thriving and successful, if he do not rise up early and sit up late, and make his business a leading object of pursuit. He cannot successfully combine two or more of these branches of labor, unless it be as mere over-sight. What, then, could the merchant, mechanic or manufacturer do, without the products of the soil? and how could he obtain them, were there not a class of men exclusively devoted to their growth? Take a single example. The exports of the United States, in 1835, amounted to more than 101 millions of dollars; of which about 75 millions, or more than three quarters, were agricultural products. Let the farmer then cease his labors, and it would almost sweep commerce from the ocean, shut up almost every merchant's shop, and starve out most of our mechanics and manufacturers.

On the other hand, let not the farmer imagine, because he is the principal producer, that he is independent of commerce, arts, and manufactures. His existence might, indeed, be continued without them; but it would be only existence as a savage; and of course only a small fraction of the present population of a country could in this way even exist. Besides, they would owe their sustenance, not to agriculture, but rather to

the bounty of Providence, which has caused the earth, in almost every land, to bring forth spontaneously the fruits essential for the food of a scattered population. But agriculture, properly so called, cannot exist without commerce and manufactures. The very first step in farming, I mean the breaking up of the soil for the seed, requires the artizan's skill in the construction of tools. Without that skill, indeed, the farmer's present comfortable, and it may be elegant, habitation, must be exchanged for the skin lodge of the Pawnee, the bark hut of the New Hollander, or, at the most, the wigwam of the aborigines of New England. His dress, too, if dress he could obtain, must be the undressed hide of some animal; and his wife and daughter must exchange their silks, muslins, and calicoes, for the filthy skin of the horse, the racoon, the bear, or the buffalo; festooned it may be, as the *ne plus ultra* of savage skill, with the quills of the porcupine, the feathers of the eagle, or bark painted with elderberries. In his habitation, too, the nicely sanded or carpeted floor must give place to the lap of mother earth, where vermin, lizards and serpents, would dispute with him the right of possession. An unglazed hole in the wall must let in the storm and the wind, as well as the light; the stagnant pool must be the mirror before which he must make his toilet; and his glass, pottery and porcelain, must give place to a wooden trencher or bowl, wrought out by a flint. Let the farmer be thus stripped for a few months, of all the necessaries, comforts and luxuries which come to him through the arts, manufactures and commerce,—let him, like Nebuchadnezzar, be compelled "to eat grass as oxen, and his body be wet with the dew of heaven, and his hairs are grown like eagle's feathers, and his nails like bird's claws,"—and he would cease to say of his present state of comfort and happiness, "is not this great Babylon, which I have built, by the might of my power, and for the honor of my majesty." He would be ready to acknowledge his dependence, if not on God, yet on commerce and the arts.

If it were necessary to illustrate this dependence still further, I might mention the character and amount of the imports into this country, in the same year for which I have mentioned the exports; viz. 1835. All the imports for that year amounted to

about a hundred and fifty millions of dollars, of which only seventeen millions, or one eighth, were agricultural products. All the rest were manufactured articles; and a large proportion of these were doubtless consumed by the agricultural part of the community, not as mere luxuries, but as comforts, and even seemingly necessaries. At least, so they would appear, were the community to be deprived of them. For our necessities usually multiply in about the same ratio as our luxuries. The artificial wants created by the latter soon become as clamorous as those which are natural.

But why should I dwell on this subject; for every agricultural fair presents us with a practical illustration of the intimate connection and dependence between agriculture and the arts. The choicest and richest displays of mechanical skill meet and gratify us there; and many of them, too, have been prepared in the farmers' families, in the intervals of leisure; so that, in fact, to attempt to depreciate manufacturers would be to depreciate farmers themselves.

The important connection between agriculture and national prosperity is a subject almost too trite for an occasion like the present. And yet few think of all the relations between these subjects. The products of the soil, which result from its cultivation, are generally thought of as the only contribution which agriculture makes to a nation's prosperity. This is, indeed, a main pillar of that prosperity. But, after all, the most important element of national character is the character of the citizens. Now, without disparagement to other classes, and other pursuits, the cultivation of the soil is eminently calculated to make genuine men; men of vigorous minds and unflinching nerve; men of stern independence and sterling integrity, who yet bow quietly to the authority which they have themselves delegated to others; men who are not tossed to and fro by every gust of feeling, but can always be found at the post of duty, whether it be a place of danger or safety; men, in short, who form the stable pillars of society, and are genuine patriots, because they have a filial attachment to the soil which their own hands have cultivated, and where their fathers are buried. Men of similar character are, indeed, found among all classes, and

in every pursuit of social life. But none of these pursuits are so well adapted as agriculture to give them the needful discipline.

Now just such men as agriculture produces are needed to fill up the ranks of other pursuits in society. For though these other pursuits are of the utmost importance, nay, indispensable to the prosperity of society, and therefore those who engage in them are in a most honorable and respectable path, they are not adapted, like agriculture, to give that physical energy and happy development of character to the rising generation, which they need to take the place of their fathers. Indeed, all the sedentary pursuits in which men engage, tend rather to the deterioration of the human constitution, so that the sons of mechanics, merchants, and professional men, can only in part fill up the vacancies occasioned by death. Nay, an enfeebled constitution often compels them to resort to agriculture to restore its lost stamina. Hence there is needed a foreign supply, to keep the ranks full and strong in these professions. And, where agriculture is in a proper state, it furnishes such a supply. The discipline which the young are undergoing on every well conducted farm in the land, is fitting them to become future artizans, merchants, and professional men. Especially are they preparing there to supply the enormous demand which the cities and larger towns are making upon the country. The fact is, that the strong mental excitement, the heavy pressure upon time, the unseasonable hours, the luxurious habits, and the want of fresh air and exercise, in city life, ere long break down the strongest constitution; and in a large proportion of cases the children of robust parents are feeble, and, though precocious, are destitute of the bodily hardihood and mental energy essential to eminent success in any pursuit. Hence such children must usually give place to youth from the country, whose decendants in time must yield to others from the same prolific source. Scandinavia was called by the historian, "the workshop of the human race," because it poured forth such swarms into southern Europe. Equally proper is it to call the farm houses of the land the workshop of the nation. For, if this supply should be cut off, our cities would soon be depopulated, or at least sink into weak effeminacy; and in fact,

the locks of the nation's strength would be shorn, and we should shake ourselves in vain. Hence, as I have wandered over the hills and valleys of our land, and have met by the wayside, and on the farm, or in the meanest hovel, with children uncultivated, and even repulsive in their appearance, yet healthy and hardy, I have often felt for them no small degree of respect, when I recollected that probably, under that rough exterior, there lay concealed the future wealthy merchant, or eminent artizan, or distinguished scholar. The refined city beau, or belle, may indeed smile contemptuously at the uncouth manners of the plough boy, who, on his first trip to the city, is staring about the streets with half opened mouth; but not unlikely that despised rustic will one day rise far above them in wealth, learning, and respectability. At any rate, such transmutations are of every day occurrence in the city.

But let not the farmer vainly imagine, that because he furnishes so important a part of the raw material of national prosperity, he is independent of that prosperity. Let incompetent, or ambitious, or unprincipled men get the reins of government into their hands; let them adopt measures that paralize commerce, shut up manufactories, discourage internal improvements, and above all, plunge the nation into war; and the farmer will find a worm at the root of his own prosperity and happiness. His produce will rot on his hands, his income be consumed by taxes, and his sons, instead of rising to respectability and influence in private life, will be made "food for powder." In short, he will soon learn how intimate is the connection between his private fortunes and the state of the nation.

The cause of education is regarded by all intelligent men, especially in a country like our own, as one of the most important of national interests; and hence we should inquire what influence is exerted upon it by agricultural pursuits. An eminently salutary influence, is the decided reply. Especially is this the case in respect to popular education, as appears from several considerations. These pursuits, in the first place, afford more of leisure for study than most others, since the hours of active toil must be so much fewer than those of the waking period of the day. The farmer, also, is ever in intimate communion

with nature; and thus an inquisitive and discriminating spirit is excited. The farmer of experience likewise soon learns how much he may be aided by a good education in his calling; and thus is he prompted to secure such an education for his children. But above all, his active habits give him so much physical vigor, that the old adage may be applied to him; *mens sana in corpore sano;* a sound mind in a sound body. He can sit down calmly to his books with little of that nervous irritability and restlessness, and little of that cloudiness and debility of intellect, that torment and retard so many of sedentary habits. Those only can appreciate the value of such a state of body and mind, who have had to struggle with its opposite. If I may be allowed to give my own experience on this subject, I would say, that decidedly the best time for study which I have ever known,—when the mind was the clearest and the nerves most quiet,—was the evening that succeeded a hard day's work in hoeing or mowing. After having mowed an acre of grass, I found my mind prepared to mow an acre of Geometry or Astronomy; and often in subsequent days, when study was a task, and there seemed to be a muffle over the mind, I have sighed for the return of that period, when the intellect had as keen an edge by night, as the scythe had by day.

In correspondence with these views, we find that primary schools, as a general fact, are better sustained and better improved by an agricultural population than almost any other. So too, in New England at least (with the exception of professional and literary men), reading is more common and more thorough in such a community. And what is read, is better digested than among classes of society who have less of calm leisure, and learn the art of talking rather than of thinking. For fluency in conversation is often in the inverse ratio of the amount of ideas in the mind; and men often talk much, not because they are so full of thoughts, but because they are destitute of them, just as a stream bubbles most which has the least water in it. The farmer, it may be, talks less and with less grace of manner; but he thinks more, and with more logic. For these reasons, the sons of farmers are peculiarly welcome at our higher literary institutions; although the inquiry there

is, not whether a youth originated from this or that profession, but whether he has the determination and ability to be a good scholar. Young men in crowded communities, under the influence of the strong social excitements which exist there, sometimes acquire a precociousness of manners and of intellect, that gives promise of more fruit than is ever realized; but when the son of the farmer presents himself, we feel much more sure, that, though the stone be just from the quarry, unhewn and unpolished, it is undoubtedly genuine marble, and will repay the labor devoted to it. Indeed, let the early history of distinguished men in our country, I mean our lawyers, our physicians, our clergymen, and our politicians, and the leaders of our benevolent enterprizes, be traced out, and I am greatly mistaken if you do not find that a large majority have once followed the plough.

Of the reflex influence of education upon agriculture I might say much. It is this indeed, almost exclusively, that distinguishes the farmer of New England from the serf of Russia; the one, about as low in the scale of humanity as is possible; a servile animal, with scarcely more of intellect than the ox or the horse; the other, an intelligent freeman, with sagacity to know what his rights are, and with the determination to maintain them; far more independent than the European lord, who, with all his wealth and his castles, is a slave to his menials. The American farmer has enough property to supply all his reasonable wants, but not so much as to make him miserable. He knows how to take care of himself, and is not compelled, therefore, as most of the wealthy are, to commit his happiness into the hands of mercenary hirelings, or unpaid slaves. And it is his education merely, that gives him such a proud preëminence over so vast a majority of his fellow men. This alone teaches him what are his peculiar advantages, and how best to improve them.

I have spoken thus far of education in its more general acceptation; as meaning the discipline of all the powers of man. But between science and agriculture, there is a still more specifically intimate relation; and on this point, as more particularly appropriate to the present occasion, and falling in with my

past course of study, I hope I may be allowed to dwell with more attention, than upon the other relations of agriculture.

There are three sciences in particular, from which it has been supposed agriculture might derive important benefit, viz.: Botany, Geology, and Chemistry. The first describes the organization and functions of plants; shows us what curious vessels they contain for receiving, digesting, and assimilating their food; and points out their germination, development, and fructification, and the effects of climate, altitude, and latitude upon their production. Geology points us to the origin and general character of soils; shows us what formations are most favorable to particular crops; and discovers mineral manures. Chemistry ascertains what are the ingredients of which plants are composed; shows us whence those ingredients are derived; tells us the composition of the soil and the atmosphere; describes the agency of light, heat, and electricity upon vegetation; traces out the various transmutations through which the nutriment passes during the growth of the plant; explains the action of the various manures, organic and mineral, and suggests the application of new substances to the soil.

It is obvious now, that these points of inquiry open before the scientific man a wide and most interesting field. And within a few years past, most diligently has it been explored. Fifteen years ago, and the works of Davy and Chaptal were about all that had much interest or authority on these subjects. But since that time some of the ablest chemists, geologists, and botanists of Europe and America, have been most actively and successfully employed in these researches; and as the result, we have the able and original works of Johnston, Liebig, Daubeny, Dumas, Boussingault, and Mulder, in Europe, and of Dana, Gray, and Draper, in this country, in addition to the large amount of matter presented in various geological reports, and the publication of a quarterly journal of agriculture, by Professors Emmons and Price, as well as several smaller agricultural papers of great merit. As a consequence, the science of agriculture has advanced most rapidly. Even a review of its progress is more than I can attempt on this occasion. But I ask your patience while I briefly notice the most important points

that have been gained, and the present aspect and prospects of agricultural science.

Whoever examines the internal structure of plants, even cursorily, will be struck with its analogy to that of animals. He will find in both, organs for the reception of food, for its digestion and assimilation, as well as a system of circulation and reproduction. The plant, indeed, has its peculiarities of organization, as for instance, that no nervous system has been discovered in it; and yet it seems possessed of irritability, if not sensibility. Under the microscope, however, it is a wonderful structure; and notwithstanding all the difficulties of the investigation, the patience of physiological botanists has disclosed an organization in plants almost as wonderful as that of animals. The manner in which the sap ascends, is, indeed, still involved in some obscurity; though the curious property possessed by vegetable and animal tissues, of causing fluids of different densities to pass through them, sometimes inwardly and sometimes outwardly, technically called *endosmosis* and *exosmosis*, is, doubtless, the predominant agency concerned in a process so adverse to gravity.

To the chemist it has long been manifest, that the true way to ascertain what food is needed by plants, is to analyze their whole substance, to see what ingredients they contain. For the notion prevalent not long since, that vegetables have the power to transmute one simple substance into another, is utterly exploded; and no scientific man now expects to find in plants any ingredient that does not exist in the soil or the atmosphere. The uniform result of careful and repeated analysis of plants is, that they are mainly and essentially composed of four principles, viz.: carbon, oxygen, hydrogen, and nitrogen. These are combined together in various ways, and form the almost entire mass of vegetables. But when plants are burnt, they leave a solid residuum, or ash, which often contains eight or nine other simple substances; viz., chlorine, iodine, sulphur, phosphorus, potassium, sodium, calcium, magnesium, aluminium, silica, iron, and manganese. These are the inorganic ingredients; and though essential to the composition of plants, they do not always exist in the same proportions, even in the

same plant, as do the organic ingredients, that is, carbon, oxygen, hydrogen, and nitrogen. Neither are any of these ingredients, organic or inorganic, found in a simple state, but are united in various ways. Thus the oxygen and hydrogen exist in the form of water; the carbon forms that portion of a plant which may be converted into charcoal; and the nitrogen constitutes one part of albumen, gluten, and other vegetable products.

The next grand inquiry is, Whence do plants derive their twelve or thirteen ingredients? If we can answer this question satisfactorily, we have gained an important step in ascertaining how the farmer can supply food to those plants which he cultivates. As a general answer to the question, we may say, that the soil and the atmosphere are the only sources whence the vegetable world can derive its nourishment. And analysis shows that ordinarily all that is essential to its healthy development is found there. Indeed, nearly or quite all of these ingredients are usually found in the soil; and the common impression is, that the greater part of the substance of plants is derived from the soil, by means of the sap absorbed by the roots, because it is necessary to add manure yearly to render soils productive. But the opinion is now general among chemists, and seems sustained by facts, that a large proportion,—say about two thirds,—of the carbon contained in plants, is absorbed directly from the atmosphere by their leaves. And yet only $\frac{1}{2500}$th part of the atmosphere is carbonic acid, which is diffused through the whole air, and less than one third of this gas is carbon. How then can a tree or forest, for instance, obtain enough of this gas to form so large a part of its substance? since the quantity immediately around it, and even the fresh portions brought by the wind, must soon be exhausted. But here a very wonderful law of nature completely provides for the difficulty. If several sorts of gas or air be brought together, even though some be much heavier than others, they will soon become equally mixed throughout; and if any one of them be removed from a particular spot, what remains of the same gas in other portions of the mixture will instantly expand, till it has filled the whole space, just as it would do if that were the only gas present. So that, if all the carbonic acid around a par-

ticular plant be absorbed, the gas will rush in from other parts of the atmosphere, and thus keep a constant supply within reach. In this way a tree can go on without interruption, except by winter, accumulating carbon for years, and even centuries. A single pine tree in Oregon, for instance, is sometimes found to contain 356,000 pounds of carbon; which required 1,305,333 pounds of carbonic acid; two thirds of which is 870,222 pounds, all taken from the atmosphere; or 800 pounds yearly; on the supposition that the tree required 1100 years for its growth. This single example will give some idea of the magnitude of the process that is going on, silently, yet surely, to supply all the forests on the globe.

And here I cannot but notice a most interesting fact connected with this subject, brought to light by modern researches, which, although not bearing directly upon agriculture, is too beautiful a development of Divine wisdom and benevolence, not to be understood by every man. It is well known that in the process of breathing, men and animals consume a vast amount of oxygen,—the essential thing in the atmosphere that sustains life,—and give out into the air an equal amount of carbonic acid; a gas, which, however essential to the growth of plants, is decidedly hostile, when in large quantities, to the health of animals. Hence it would seem as if the process of breathing from century to century must tend to corrupt the air, by depriving it of oxygen and loading it with carbonic acid. And all the fires kindled on the globe produce the same effects. But the agency of vegetation entirely counteracts all these causes of deterioration. Carbonic acid consists of about one third part of carbon, and two thirds of oxygen. Now plants take the very carbonic acid that is given out by animals and fires, and having abstracted the carbon from it, throw back the oxygen into the atmosphere; and thus supply the constant deficiency produced by the respiration of animals and combustion, and remove all superabundance of carbonic acid, and keep the atmosphere always entirely pure. It is estimated that a very large tree will give out enough oxygen to supply the wants of a man; that is, about two pounds daily; for that is his daily consumption. What a wonderful example of that compensation in nature,

which shows how infinitely Divine transcends human skill and benevolence!

We have seen that the largest part of the carbon of plants is absorbed directly by the leaves from the atmosphere. But carbonic acid is carried down in a state of solution by drops of rain, and this, being absorbed by the roots, furnishes of course a further supply of carbon. Again, the manure in the soil ferments, and furnishes another portion of the same gas, which, in like manner, is carried into the plant. Most chemists suppose that carbon is furnished to the plant in no other state than that of carbonic acid. But some of the organic matter in the soil is certainly soluble in water; and what should prevent its being carried into the vessels of the plant, and its carbon from being there extracted by the same chemistry which decomposes the carbonic acid? Indeed, Professor Johnston has shown most conclusively, that this is one of the modes in which carbon is supplied. (*Lectures on Agricultural Chemistry.* Lecture 3, p. 87. Wiley & Putnam's edition.)

So much for the carbon which forms the principal part of the solid portion of the plant. Whence does it obtain its oxygen and hydrogen? Nearly all of it, no doubt, from the water pumped up by the roots, or absorbed by the leaves; for water is entirely composed of these two elements. Nitrogen, also, the least abundant ingredient, might, it would seem, be derived directly from the air by absorption, since four fifths of the atmosphere consists of it; but there is no evidence of any such absorption. Yet a small quantity of it is absorbed by the water taken up by the roots. Ammonia also, a compound of nitrogen and hydrogen, sometimes exists in small quantity in the air, and is produced still more abundantly by fermenting manures. Nitric acid likewise is sometimes found in minute quantity in the atmosphere, and its absorption would furnish nitrogen as well as oxygen.

As to the inorganic matter of plants, the sulphur, phosphorus, lime, silex, iron, manganese, &c., it must nearly all be derived from the soil, since water alone can hold it in solution. Chlorine perhaps may, as Dr. Dana suggests, be derived from the atmosphere in the condition of common salt, which he has shown to exist probably in the air.

Such are the ordinary sources whence the food of the vegetable world is derived. But there is one principle of vegetable physiology of great importance and deep philosophical interest, that should be noticed, since its neglect has been a fruitful source of controversy among scientific men. It cannot be doubted that plants like animals have the power of adapting themselves to circumstances; so that, if they cannot obtain nourishment from one source, they are able to derive it from another. It is well known that some plants will flourish in pure water, others suspended in the air; and on some marly soils, destitute of vegetable matter, abundant crops may be raised without manure through an indefinite number of years; though in all these cases, probably, plants are less robust and prolific than if supplied with food both from the soil and the air. But their ability to draw a less perfect subsistence from different sources is another interesting evidence of Divine foresight and benevolence.

Chemists have not been satisfied with ascertaining the nature and origin of the nutriment of vegetable nature. They have attempted to follow the crude materials through their various and most delicate metamorphoses, till they become converted into the different remarkable compounds which plants produce. And, though much of the chemistry of these changes is concealed, yet we can see what are the most important agents concerned; and heat, light, and electricity, stand at the head of the list. It can hardly be doubted that the rootlets of plants have the power, by a galvanic agency, of eliminating from the soil many important principles, not otherwise separable; nor is it more doubtful, that the various products of plants are the result of a similar galvanic agency exerted by their organs. The necessity of heat for effecting these various changes has always been known; but it is not till recently that the necessity of light, and its mode of action, were understood. The sap, it appears, undergoes but little change till it reaches the leaves. There it experiences digestion, by the action of solar light upon the green matter, called *chlorophylle*. The green matter itself is first produced, and then it forms an apparatus by which the compounds in the sap are decomposed, the oxygen gas is

liberated, and mineral or inorganic matter becomes organized, that is, converted into the various parts of the plant. The chemist cannot, indeed, look into all the crucibles, and retorts, and flasks which nature employs in this curious laboratory, nor examine all the re-agents, because they are too minute; but he can see enough to show that the whole is a chemical process, modified somewhat by the vital principle. He can see enough to make him strongly desire to see more; enough to make him feel how infinitely superior is nature's chemistry to his own.

The analysis of the various parts and products of plants has disclosed some most curious facts as to their great similarity, and their relation to the principles found in animals. It has been ascertained that animals need two sorts of food; one kind containing nitrogen, and another sort destitute of it. Those principles containing nitrogen are necessary for their nourishment, and are found to be three, called albumen, fibrine, and caseine; which are the same essentially in composition. Those principles destitute of nitrogen are necessary to sustain the process of breathing, and thus to furnish fuel for keeping up the animal heat. These are fat, starch, sugar, gum, &c. Now all these principles, both for giving nutrition and keeping up the animal heat, exist ready formed in vegetables, and, when vegetables are taken for food, the animal merely appropriates the principles, but does not change them. Thus fat exists in the oily and waxy parts of vegetables; starch and sugar occur abundantly in many plants; and the fibrine, albumen and caseine, are derived from the gluten of flour, the leguminous principle of beans, &c. It needs nothing, also, but water and the oxygen of the air, to convert these various principles into one another; and sometimes this can be done even by man. Thus, starch is easily changed into sugar, and very palatable bread has been made out of wood, which, in fact, is chiefly fibrine, and contains all that is essential for nourishment. Who knows how soon it may happen, that a few cords of wood shall furnish the poor man not only with fuel, but with bread?

It is obvious that these curious facts have an important bearing upon several questions relating to the food best suited to man. They show us, in the first place, that whether a man eats vege-

table or animal food, he derives from it the very same principles, though not in the same proportion. Even the leaves of most plants contain enough of nutriment to sustain life, especially in warm climates. But in their fruit, especially the different kinds of grain, it is more concentrated, and, in animal food, still more so; or rather such is the case with the nitrogenized principles. Hence the question as to the use of animal food, becomes reduced chiefly to one of experience, or convenience, or humanity.

These theories of nutrition and animal heat cannot be regarded as completely established. But they are so much more ingenious and satisfactory than any which have preceded them, as to give them strong claims upon our attention.

Geology teaches us that soils are nothing but rocks crushed into powder, and mixed up with vegetable or animal matter. Hence we might expect that they would differ in composition as the rocks differ; and so they do; though such has been the nature of the agency by which the rocks were crumbled down, that the materials from several rocks are frequently mingled together. But in fact, rocks do not differ very materially in composition. Some, such as trap rock and limestone, contain more lime and magnesia than others. But there is scarcely any rock of much extent, that does not contain all the earthy ingredients essential to plants; and, therefore, so far as their composition is concerned, it is comparatively unimportant from what rock a soil is derived. We shall be almost sure to find in it a large amount of silex, more or less of alumina, lime, and magnesia, with gypsum and phosphate of lime. Till within a few years, the latter substance, so important to plants, was supposed to exist in a few soils only. And it is to our countryman, Dr. S. L. Dana, that we are indebted for first suggesting that it could be found in all soils; and in accordance with this suggestion, in my examination of one hundred and forty-six soils of Massachusetts, which I analyzed by the direction of the Government, I found only one, and that, pure sand, which did not contain phosphates. It was not until some years after I had published these results, and the suggestion of Dr. Dana, that any European chemist brought out the same idea; and therefore I claim for him the origination of this discovery, which I consider a very important one in scientific agriculture.

The opinion is very prevalent, that there is one particular mineral composition to soils indispensable to the highest degree of fertility, and that the chemist, by analyzing a soil, can tell in what it is deficient, and direct the farmer how to supply the wanting ingredient; and hence, in the view of most persons, the great importance of an analysis of soils. But I believe that facts do not justify these opinions fully. Certain mineral ingredients do indeed usually enter into the composition of plants, and must be supplied from the soil. But, as said before, soils differing most widely in composition usually contain enough of all these essential ingredients for the use of the plant; and it is also found, that some of these ingredients may be substituted for others. The great differences in the fertility of soils depend more upon the amount and condition of the organic matter which they contain, and upon their power of absorbing and retaining heat and moisture, and upon their degree of fineness or coarseness, than upon their mineral constitution. Every farmer knows that a soil may be too coarse or too fine for good crops, and that it may be too cold; and also that it may abound in organic matter,—that is, such as results from decayed animals and vegetables,—and yet be very barren. And when ashes, or quick lime, or marl, or gypsum, or bone powder, is added, they render the soil fertile, not because the soil is entirely destitute of these materials, but because they bring the vegetable matter into such a state that it can be taken up by the roots of plants; or they make it mellow, or more tenacious of heat or moisture.

If these views are correct, some important consequences follow. In the first place, the community are expecting too much from the mere analysis of soils. An examination of the condition and amount of organic matter which they contain, and of the condition of the lime, whether as a silicate, carbonate, or sulphate, is of the most consequence. But I do not believe, that agricultural chemistry is yet advanced enough to enable the analyst to determine, in many cases, precisely what is the ingredient wanting in a soil to render it very fertile. The time may come, perhaps, when this may be done, though not solely, as I believe, by analysis. Let no one, however, hence

infer that the labors of the chemist are unimportant in agriculture. How, except by his sagacity and patience, have the important results been obtained which are now doing so much to advance the interests of agriculture? And still there is a great work to do in the analysis of plants, in all stages of their growth; of manures; of the air, and the waters. And that will be a day of bright promise to the farming interests of Massachusetts, (or, indeed, of any other state of the Union,) when she shall appoint a State chemist, not for one or two years, but during good behavior. In conjunction with, and by the aid of, Agricultural and Horticultural Societies, such a man would do more to increase the productions of our soil, and thus promote the public welfare, than the same amount of expenditure could accomplish in any other way. But the grand difficulty in the way of such an appointment is, that the public cannot see any immediate fruits from it.

Another important consequence from these principles is, that there is scarcely any soil too barren to be made very fertile; and that what the farmers of New England should aim at, is, not to transplant their sons to the fertile prairies of the west, but to improve our own soil; so that they shall be contented with the paternal inheritance. To illustrate this position, let me give an example from my own experience. Every one knows that there is not a more barren spot in New England, than the further extremity of Cape Cod; where the traveller sees little else but white drifting sand, and scarcely no vegetation, except a few stinted pines, and beach, and poverty grass. Finding myself in Truro, and, as I fancied, almost beyond the regions of agriculture, I was surprised, on being invited by a respectable farmer there to visit a piece of ground, on which he was in the habit of raising annually fifty bushels of Indian corn to the acre. I found that the soil did not differ from the white sand around it, except in containing an abundance of fragments of quahaug shells, and enough of organic matter to give it a dark color Having extracted these shells, that is, all the carbonate of lime, (about 20 per cent.,) and a little phosphate, and then burnt off the organic matter, nothing remained but the pure white sand of the Cape.

Now this is an extreme case; and if such a soil can be made fertile, I know of none in New England that cannot be made so. True, it requires industry, ingenuity, and perseverance. But this is just what men need for the development of a good character, and for happiness. Providence never conferred a greater blessing upon this nation, than by directing our Pilgrim Fathers to the comparatively barren shores of New England. Had they found an easy and naturally fertile soil here, New England character, in which we so much glory, would never have been developed. It needed a soil, capable, by cultivation, of yielding a good return, but not affording even subsistence without uniting industry and skill. We ought, therefore, to be thankful for the comparative barrenness of our soil, and, instead of envying others their naturally richer fields, we ought to be stimulated to make ours as rich as possible by cultivation; and then, we shall have, what is very seldom acquired in regions that yield almost a spontaneous growth, and what is worth infinitely more than natural fertility; I mean industrious and sober habits; well informed minds; energy of character; and a good conscience. Many, I know, expect that they shall transplant New England character with New England men, to the fertile valleys of the west and the south. But I greatly fear, that, in a few generations, that character will be so modified by a fertile soil, that it can no longer be distinguished. For the history of man shows, that the brightest exhibitions of human character have been made in regions where nature has done less, but art and industry, and sound moral and religious principles, more. If, therefore, we wish to increase the moral power of New England, the true way is, to use vigorously all those means, and to patronize those sciences, which tend to improve her soil, and thus increase her population within her own limits. And this, with me, is one of the strongest arguments for doing all we can, to sustain agricultural societies; since they are accomplishing this work in a most energetic and efficient manner.

Perhaps science has not thrown more light upon any part of agriculture, than upon that of the nature and operation of manures. It is but a very few years since there was a darkness that might be felt upon this subject. But now, we know the

composition and specific action of most substances called manures. They may be divided into two classes: the first, embracing the various salts useful upon land; and the other, consisting of vegetable or animal matter mixed with salts. The salts are such as common salt, nitre, phosphate of lime, or bone ashes, limestone, marl, nitrate of lime, potash, soda, &c. &c. These, in their pure state, do not afford much nutriment to plants; but they act upon the nutriment, and prepare it for the organs of the plant, by rendering it soluble and decomposing it. The common manures, or a large part of them, are converted, when mixed with the soil, into what is called geine, or humus. But this is not in a proper state to be taken up by the roots, until acted upon by other substances, when it becomes soluble, or produces carbonic acid. Common manures usually contain more or less of the salts; but, being most of them soluble, they are carried away by rains; and hence the value of new supplies. Nor does it usually require but a small quantity, as the example of ashes, and gypsum, and phosphate of lime evinces. The latter, in the state of bone dust, where the phosphate is mixed with carbonate of lime and cartilage, is a manure so concentrated, that one ton of it is equal to 14 tons of farm yard manure; and almost equally concentrated is guano, and some other compounds now used upon land.

But there is not time to go into specific details as to the chemical action of manure. Here, however, chemistry has done a noble work for agriculture; and yet the field is not all explored.

Chemistry has also done, and is destined to do a great work, in this same field, by pointing out new manures. It is well known that some of the most valuable now in use have been suggested, or first prepared in a proper manner, by this science. It teaches us that whatever substance contains such salts and humus as will produce ammonia, will answer for manure; and that the value of the manure depends upon the quantity of ammonia produced. And among the substances to which the farmers of Massachusetts will do well to give more attention than they have done, aided by the valuable suggestions of Dr. Dana, in his Muck Manual, is the black mud and peat of our swamps. From this single source I doubt not, with the aid

of chemistry, enough manure may be derived to add one third to the present produce of our soil. But I cannot go into details.

Allow me also to repeat a suggestion made in my report on the Agricultural Geology of Massachusetts, respecting the use of what I call *Muck Sand*, dug from a considerable depth in the earth. It is well known to the chemist, that most of the salts so useful upon land, are dissolved by rains, and carried downwards through the soil, till they meet with a water-bearing stratum. There they will accumulate; and now, let that stratum,—known by springs issuing from it,—be dug up and spread over the surface, and these salts will exert their appropriate influence upon the crops. This very principle is the chief secret of the good effects of subsoil ploughing; and I doubt not but it will yet lead to valuable results in the use of substances drawn from a still greater depth. In some instances, they certainly have produced astonishing effects.

Some very ingenious suggestions have lately been thrown out by Liebig, respecting the formation of an artificial manure, that will be almost sure to produce good crops on every soil. *It must contain all the ingredients that actually exist in the crops raised by the farmer.* Now these have been ascertained with a good degree of accuracy. In the ashes of wheat, beans, peas, potatoes, clover, and hay, for instance, we find alkaline carbonates, carbonate of lime, phosphate of lime, phosphate of magnesia, sulphate of potash, or soda, magnesia, chloride of iodine, or potassium, phosphate of iron, and magnesia, and carbonate of potash and soda. Silex we need not take into the account, since it exists in all soils. If now to these inorganic substances we add those that are organic,—vegetable or animal,—we shall have all that is essential to sustain the crops that have been named. Hence Liebig suggests, that if we mix the earthy and alkaline phosphates, sulphate of potash, common salt, and chloride of potassium, the salts of lime, and the salts of ammonia, with decaying vegetable matters, we shall obtain a manure that can hardly fail to do admirable service, far more, certainly, than the manures now in use; especially if these substances may be brought into such a state, that rains shall not wash them away, as they now do. By the same principles, peculiar manures

could be provided for particular crops and soils, adapted to the composition of both. When chemistry shall have succeeded, as I trust will be done, in compounding such manures, and they shall be offered for sale, we may anticipate a rapid advance in practical agriculture.

Though I have doubtless wearied your patience, gentlemen of the Society, by these details, I would gladly add more. But I trust I have said enough to show how important a bearing science has upon practical agriculture. The day I trust has gone by, certainly among the enlightened farmers of this great valley, when men reject and treat contemptuously what has been called *book farming;* by which I understand farming on scientific principles. Such farming has done too much, both in Europe and this country, to be any longer despised, or even looked upon with scepticism. The many agricultural societies, on both sides of the Atlantic, so prolific of good, are based upon science; and would be almost useless without it: and the numerous journals of agriculture now published, derive their chief and most valuable matter from the applications of science to cultivation. Indeed, it is scientific agriculture that enables twenty millions of people to subsist in Great Britain on the same soil, which in 1780 sustained only nine millions. The Highland Agricultural Society, in Scotland, especially, has done wonders, when we consider that no country is more bleak and barren in Europe; yet it now has reached a very high state of agricultural prosperity, and chiefly through the influence of that Society, now sixty-six years old. The average produce of wheat in the whole of Great Britain was formerly but nine bushels to the acre; but it is now more than 19 bushels; and in several counties of England and Scotland, the average is not less than 50 bushels. Says a late traveller, "a farmer by the name of Thomas Oliver, residing five or six miles from Edinburgh, leased a farm for the last twenty years of 150 acres, paying annually a rent of ten guineas per acre, or fifty dollars; on which he raised grain, hay, and vegetables for the market of Edinburgh. This lease he has recently renewed for twenty-nine years on the same terms, and from a poor man has become independent in his circumstances, and now rides in his

carriage. All may be accounted for on the principles of judicious manuring and careful industrious cultivation. On the continent, especially in Germany, their annual fairs bring together the farmers and peasants of all the surrounding country, when their ambition and industry are stimulated by a variety of fêtes and the distribution of prizes to successful competitors, and whilst princes, dukes, and barons are engaged in awarding prizes to those who have been most successful in the cultivation of grains and cattle, their lovely wives are occupied in a humble but much more lovely scene, in complimenting and distributing premiums to the industrious housewife, for her fine specimens of fruit, her butter and cheese, her linen clothes, weaving, knitting, and other manufactures. I have no doubt I shall be ridiculed for my want of taste, when I state, that to me the Grand Duchess of Baden, presenting a silver cup to a peasant girl, before an assembled crowd of farmers and nobility, for the finest specimen of manufactured gloves, was a more interesting sight than that of the gay queen Victoria, racing through St. James's Park, with fifty fools at her heels, striving not to be distanced by their lovely mistress."—(*Southern Cabinet for Jan.*, 1840, p. 4.)

In this country, we are beginning to realize similar fruits from enlightened agriculture, under the fostering care of Agricultural Societies. Many a noble farm in New England, with its produce doubled or trebled within a few years, testifies to their influence. Out of New England a similar progress is made. I refer, for a single example, to the farm of James Gowen, near Philadelphia. Ten years ago he took possession of it in a very worn out condition. Now he speaks of 100 bushels of corn, 400 bushels of potatoes, and 50 bushels of wheat, as common crops. This same leaven is beginning powerfully to work in this delightful valley. Our farmers have been fearful that they could not compete with the products of the West and South, poured in upon them through the great iron sluice-ways that steam has forced open. But let them unite yankee industry and perseverance to scientific agriculture, and I will put them against the world. The more rail-roads we have the better; for they will only bring the market nearer. Instead of discouraging the farmer, they should stimulate him to seize upon and

apply all the principles of science and experience to improve the cultivation of the soil. Why, for instance, should not the almost entire surface of New England exhibit as high a state of cultivation as we now witness around most of our villages? The soil is capable of it; nay, of much higher cultivation,—capable of sustaining four times its present population; and thus, if our morals and religion be preserved, of giving us four times more influence upon the world. I trust that the next generation will see this statement verified; and that, too, as the fruit of two things of which some are very much afraid, viz.: rail-roads and book farming. Much occasion will the farmers, as well as others, in this valley have, in my opinion, to rejoice when the first steam whistle shall sound as it soon will along the sides of Holyoke and Tom. We may not all indeed be benefited as much as we expect and wish, and this and that individual or village may receive no benefit, but the interests of the community as a whole will ultimately be greatly promoted, and no class be more surely benefited than the farmers. We ought, therefore, to have public spirit and benevolence enough to rejoice in the completion of this enterprise, even though as individuals, or in limited districts, we receive little advantage. It is an illiberal spirit, and certainly not a Christian spirit, which can see no benefit in any public improvement, unless brought about precisely in the way we would have it.

Protracted as my remarks have been, I cannot feel justified in closing without adverting to the relations of agriculture to certain objects of far higher importance than any yet mentioned. I refer to the mutual bearings between agriculture and personal and domestic happiness, morality and religion.

The influence of moral and agricultural pursuits upon personal and domestic happiness, has, from the earliest civilized times, been a fruitful theme for the poet's numbers and the philosopher's lucubrations. In the morning of life, indeed, while yet time and experience have not stripped the world of its rainbow hues, men fancy that happiness dwells in more public and exciting pursuits. One seeks it on the battle field and in the wreaths that crown the warrior's brow. But he finds at last that a sea of blood is not a sea of happiness. Another aspires

after distinction in political life; nor does he learn, without much bitter experience, how far away from the abode of happiness, the surges and storms of public life are driving him. Another labors with untiring perseverance to stand high in the learned professions, and discovers not till the desired elevation has been reached, how far it rises, not merely above the follies, but the enjoyments of life. Another finds that the luxury and leisure of great wealth and fashion, when time has disrobed them of their novelty, and cooled the passions, bring little with them but a tasteless and wearisome round of heartless pursuits; while the stream of happiness, which he was just ready to quaff, is dried up, leaving only the empty channel, like the streams of the desert, to mock desire. In short, men of all professions, especially the most elevated, as the evening of life approaches, turn their thoughts with strong desire to the quiet and healthful scenes of agricultural life; and find in its peaceful labors that modicum of enjoyment, which they have sought in vain in other pursuits. There have many of earth's greatest and best, found new chords of pleasure to awake and vibrate, after all artificial pleasures had become insipid and disgusting. There have they found how much truth and beauty there is in the poet's well known eulogium upon the farmer's lot.

> "Ah happy swain! ah race beloved of heaven!
> If known thy bliss, how great the blessing given!
> True peace is thine; and life that knows no change,
> And various wealth through nature's boundless range.
> Content and patience youth's long toil, assuage,
> Repose and reverence tend declining age;
> There gods yet dwell, and, as she fled mankind,
> There Justice left her last lone trace behind."

Should we now invert the tables, it were easy to show how strong a reflex influence is exerted upon agriculture by personal and domestic happiness. For unless men are deeply interested in any pursuit, it will never flourish in their hands; and they cannot but be interested in that which affords them high enjoyment; and especially, if, as in the case of agriculture, the enjoyment increases in the same proportion as the success. The difference between feet and slave labor depends mainly upon this principle. The slave takes little or no interest in his task,

and hence the plantation deteriorates in his hands, and requires double the number of laborers to manage it. But the happiness already experienced, and the hope of more, give a double efficiency to the labors of the freeman. Hence the amount of happiness experienced by the cultivators of a farm, is no bad index of the condition and success of its management. On the same principle, we should expect that the farmer, who has a large and happy family to aid him, would keep his land in a much better state, than he who lives in what is sarcastically denominated *single blessedness*. I confess that there are some cases where men of this latter description, do manage their farms with great success; and these cases may seem to refute the principle which I advocate, that the family relation is almost indispensable to good husbandry. But in philosophy, where nine facts conspire to prove a principle, and the tenth seems adverse to it, we do not allow the rare anomaly to overthrow the principle, but we lay it aside, in the expectation that we shall understand it better by and by. So we might do with the cases under consideration, which are certainly fewer than one in ten, as I am happy to state. We might say, respecting them, however, that they only prove extraordinary tact in the individuals referred to, in the management of a farm; and if they were only aided by a happy family, they would take all the premiums offered by our agricultural societies. But, upon the whole, I prefer to lay these cases aside for the present, as unexplained anomalies; hoping that he who addresses you next year, will not find these individuals in his way; but that no longer satisfied with the Bachelor's Degree, they have aspired after higher honors, and have become Masters of Families, if not Masters of Arts.

The connection between agricultural pursuits and correct moral habits, is most striking and important. The untiring industry and occupation demanded by these pursuits, were enough to take away half the temptations to vice, by which men are overcome; for it is a truth none the less valuable because it occurs in a nursery song,—

> "That Satan finds some business still
> For idle hands to do."

Then the proper development of the physical system, which is the result of systematic labor in the open air, and of plain food, prevents that precocious manifestation of the appetites and passions, and their unnatural excitement, which are the curse of sedentary life, and break down so early so many constitutions, and plunge in infamy so many bright intellects. Besides, the farmer, in a great measure, escapes the contaminations that spread, as if contagious, among a crowded population. In comparative retirement, fully occupied with healthy and innocent, or rather, useful occupations, and out of the way of unhealthy excitements, he can pursue an even course of life which a philosopher might envy, and which is most favorable to all the manly virtues.

One other consideration shows how naturally we connect agricultural occupations with correct morality. When we learn that any other class of the community have become degenerate and corrupt, we do not despair of the country, if the farmers still retain their integrity. But, when it is said that these have become loose in their morals, we give over the nation as hopelessly depraved; never doubting that the contagion must first have pervaded and spread moral ruin among all other classes.

No less decidedly can we speak of the reflex influence of sound morality upon agriculture. Indeed, most of the moral virtues are indispensable to the success of the farmer. Let him, for instance, become indolent, a tavern haunter, a bar-room politician, a news monger, a speculator, and especially an intemperate man, and the effect upon his farm will be as fatal as if burnt over every three months. On the other hand, inquire of our merchants and artisans what has been the effect of the modern reformation in temperance upon the farmers of our land, and they will tell you that the result has been wonderful in multiplying among them the comforts and luxuries of life. Their enlarged and improved barns, their more tasteful and elegant houses, their carpeted rooms, their elegant mirrors and sofas, and stoves, their enlarged libraries, and many other luxuries and elegancies, found now in three times as many families as fifteen years ago, testify to the mighty influence of the cardinal virtue of temperance upon our agricultural popula-

tion; though in fact, the influence has been no less decided upon all other classes; except, perhaps, some of the wealthy and fashionable, who still cling to the *wine cup;* but whose wealth, unless they do speedily dash that cup from their lips, will assuredly pass from them to the hands of those, into whose path cold water is washing golden sands.

But the crowning excellence of all pursuits and all classes remains to be noticed. I mean pure and undefiled religion. And really, if agriculture is favorable to its reception and development, this is the greatest recommendation of that pursuit. Now what religion reasonably asks, is, that its claims should be examined by a mind in a healthy state, free from prejudice, not perverted by a wicked life, capable of forming a proper estimate of this world in relation to the next, and of correctly balancing the evidence for and against Christianity. And we have shown that the tendency of agricultural pursuits is to produce such a state of mind and of heart. Accordingly, among no class of men do the advocates of true religion find a more ready reception of its principles, and a better exemplification of its spirit, than among the cultivators of the soil. When they yield their hearts to its influence, it is a deliberate consecration; not the result of animal excitement, or partial views; and therefore, likely to be thorough and enduring as life. In short, the influence of these pursuits is seen in the religion of their cultivators, as well as in every thing else.

But, though agriculture may thus in some degree subserve the cause of religion, far greater is the benefit conferred by religion upon every agriculturist who adopts and practises it. To him, and his family, it is literally true, that in a pecuniary respect, godliness is great gain. There is no motive to industry and economy that will compare in power with a religious one. If love to God and love to man reign in the farmer's heart, and to do good to others be the grand object for which he lives and acts, how cheerfully, how judiciously, how perseveringly will he labor! He who labors merely to gratify his inferior appetites, or his selfish passions, or a sordid love of gain, will be very likely to grasp at so much, and be so little scrupulous as to the means he employs, as to lose the whole; or, at

least, to be subject to continual vexation and collision with others. Take away religion from the farm house, and you have robbed it of its brightest jewel. What spectacle can be more beautiful and impressive, than to see the well ordered and affectionate family of the farmer, bowing in unison at the still hour of the rising sun, around the domestic altar, and to hear the hymn of praise from sweet voices, stealing softly through the morning air, followed by the tones of prayer from the priest of the family? What a preparation for the labors of the day! And how happily, when its toils are ended, will they repeat over this delightful service! With what union of purpose and feeling will such a family labor; and how cheerfully and liberally will they impart of the fruits of their toils to every good cause! So, too, when trials and afflictions come, what a talismanic power is there in the religion of that family, to blunt their keenness, and to infuse sweetness into the bitter cup of sorrow! And let not the farmer, in the pride of a stern independence, fancy that the time will never come, when he shall need the power of piety to buoy up his sinking spirit. For the hour is at hand, when, at the withering touch of disease, his strong nerves shall tremble like the aspen, and his quailing spirit can find no resting place, but in a genuine, humble, spiritual piety. If, then, religion be so important as a balance wheel and regulator in his secular affairs, and the only rock on which he can stand amid the billows of disease and misfortune, he does not show the shrewdness and wisdom of a New England farmer, who fails to secure the precious boon.

Thus have I endeavored to show some of the links of the golden chain that binds together in strong harmony the various employments and enjoyments of civilized man. With a few brief concluding remarks, I will relieve your wearied patience.

In the first place, men of different professions and conditions in society, should see in this subject, how unreasonable and suicidal are the jealousies, antipathies, and rivalries, that too often prevail among them. We here learn that, should they succeed in uprooting the pursuit or the individual, apparently so much in their way, it would strike out one of the links in the chain that binds society together; and they would suffer as

well as others in the collisions and discord that would follow. Of all the lawful pursuits of society, we may use the language of Paul respecting the members of the human body; "the eye cannot say unto the hand, I have no need of thee, nor again the head to the feet, I have no need of you. God hath tempered the body together; having given more abundant honor to that part which lacked, that there should be no schism in the body; but that the members should have the same care one for another; and whether one member suffer, all the members suffer with it, or one member be honored, all the members rejoice with it." One individual or pursuit cannot be unduly depressed, without injuring all others; and the prosperity of one is the prosperity of all. Men of different occupations, therefore, should help one another, if for no other reason, because it will help themselves; and they should sympathize in the calamity, when other pursuits do not prosper, because they will be sure to feel the reaction themselves.

Again, the subject teaches us that all other professions in society should lend their efforts to give increased prosperity to agriculture. The principle of mutual dependence, which I have illustrated at this time, will not indeed allow that agriculture should be exclusively fostered. But there is less danger of aiding this branch of human industry too much than any other; first, because this is confessedly the most important of all, and secondly, because improvement in husbandry will increase our population by increasing their means of support, and thus open new fields for the expansion of other arts and professions. It is certain, therefore, that he who contributes even a mite to improve the cultivation of the soil, is aiding to swell the tide of human happiness; for we have seen that these pursuits are decidedly favorable to personal and domestic happiness, as well as to morality and religion. Why then should not men of every trade and profession, both on the score of personal interest and duty, give encouragement and aid to every effort to advance this noble art? In my view, all classes of society, and of both sexes, should honor these gala days of the farmer by their presence. Here we ought to meet the lawyer, the physician, and the clergyman, the literary and the scientific man,

and the man of wealth and fashion, to bid God speed, if nothing more, to efforts more fully to execute the first command of God to man, "to replenish the earth and subdue it." Alas, how small a portion of the earth has yet been subdued! And how much greater efforts have been made to lay it waste and depopulate it, than to extirpate the thorn and the briar, and to make the golden harvest wave over all its surface! It is high time that men of every profession should be made to feel, that as patriots and Christians, they can no longer be excused from doing what they can in this great work.

Finally, let this Society persevere in the pursuit of the noble object they have in view. Do any ask what that object is? It cannot be any thing less, it ought not to be any thing less, than to double the produce of this valley before the close of this century, and, of course, to double its population, while the standard of education, and morality, and religion, shall be raised, instead of being lowered. Is this object Utopian? No; it can be accomplished. It has been done, to a great extent, in some European countries in a shorter time; especially in Scotland, whose soil and climate are far less favorable to agriculture than our own. True, we have in this valley not a little of that kind of soil, which I have represented as one of the greatest blessings Providence ever conferred upon New England; I mean a poor soil. But I am more afraid that we have so much good land here, that the spirit of industry and perseverance, characteristic of those whose veins are filled with Saxon blood, will not be sufficiently roused. Let it be aroused, and the work will be done. And how many motives and encouragements are calling on you, gentlemen, or rather upon the whole community, to urge on this enterprise with a vigorous hand! What a voice is there in these rail-roads and canals, and the navigable Connecticut, which have approximated us so closely to the sea-board and the largest markets of the land! What a voice in that Western and Southern produce, which passes directly through your territory to supply those markets! Science, too, is going before you to prepare the way and to cheer you onward. Hear you not, also, the voice of your country, and, especially, of New England, whose prosperity is ever so dear

to her sons? Think what it is to double the population, and the intellectual and moral power, of a large portion of New England. You know what her influence has been during the past, and you can judge how much good those will accomplish, who shall double that influence in the future. Learning, morality, and religion, are indeed most deeply concerned in such a consummation as we are contemplating; and therefore should all hearts and hands unite in hastening it on. I know that you will not prove recreant to the high trust committed to you by Providence, and purchased by so many toils and sacrifices of your fathers. I fancy, rather, that some of the young men who hear me, now, before their sun of life shall set, will see realized more than my prophecies to-day; and smile to remember how feeble was my faith, and limited my anticipations. Then, and not till then, when it shall be seen how mighty an agency this Society has exerted to bring about such a consummation, will the labors and sacrifices of those be duly appreciated and honored, who have laid its foundations and carried up its superstructure.

DESCRIPTION OF THE STOCK

RECENTLY IMPORTED BY

THE MASSACHUSETTS SOCIETY

FOR

PROMOTING AGRICULTURE.

By E. PHINNEY, ESQ., *a Trustee of the Society.*

THE Trustees, with an honest desire of promoting the interests of agriculture and improvement in the various branches of rural economy, had, for many years, devoted the income of the Society's funds to premiums on the best cultivated farms, on the various kinds of farm produce, farm stock, and to such other objects as they believed best calculated to promote the interest of the great body of farmers. Of the effect of their labors, the public can the best judge.

It seemed to the Trustees, that very little progress had been made, particularly in the dairy stock of the country. They could point to no particular object, no decided mark of improvement or permanent change upon which the future and progressive improvement of our dairy stock could, with any certainty, be calculated.

Thousands of dollars have been offered and awarded in premiums for the best milch cows within the Commonwealth, during the last twenty years, and, as appeared to the Trustees, to very little benefit. Whoever has attended our Cattle Shows, will have occasionally met with a cow remarkable for her milking properties, which the fortunate owner purchased from some

drove. This *accidental* cow is exhibited at the Cattle Show; well authenticated proofs of her great yield of milk or butter are produced; the owner takes the highest prize, and puts the money into his pocket; the calf is sold to the butcher; and the cow the next year is put into the beef barrel. And this has been the beginning and the end of most of the native cows to which the highest prizes have been awarded. The writer knows not a single instance where the offspring of any one of these high premium native cows has inherited the valuable properties of the dam in a sufficient degree to induce the owner to raise it, with the exception, perhaps, of the famous Groton cow, whose descendants, in the hands of Col. Jaques, might have added greatly to the value of our dairy stock, had the Colonel possessed the means of carrying out his plans; and, in this instance, the valuable properties of the dam were transmitted to the progeny solely by the means of crossing with the pure breed of a foreign stock. The cautious farmer will not run the risk, nor incur the expense, of raising a calf from stock, of the origin of which, and of the blood of the various breeds that runs in the veins of his favorite cow, he knows nothing. Acting from a belief in the truth of the old adage, which has been taught him from his youth upward, that "a good cow *may* have a bad calf," he can have no assurance that the descendant of his native cow will not take its character from, and inherit the inferior properties of, some near or more remote ancestor. He had rather take his chance in the next drove that comes along; knowing that he shall at least avoid the expense and trouble of rearing a calf upon whose good properties he can make no certain calculation. Now it will hardly be pretended that the offering and awarding of premiums for this description of cows, has, or ever will have, the effect to improve the dairy stock of the country.

The writer would by no means detract from the value of these accidentally good cows, the natives of the country. There are, no doubt, to be found among the farmers of Massachusetts, many cows of native origin, possessing as valuable properties for all purposes, except for breeding, as any that can be imported from abroad. And they are not without their value as breeders, where they and their descendants may be crossed with the

pure blood of some long and well established race of foreign animals. In this way we may chance to perpetuate the rare qualities of our native cows, united with the well-established traits of character of the imported stock.

It may be contended that we need not the aid of foreign stock to raise up one of the best breeds of cattle in the world. This may be true; but who will undertake it? What individual farmer has the patience, the skill, the intelligence, and the capital to engage in a task that will require many years and much capital to bring to any considerable degree of perfection? And where would be the propriety or the economy of undertaking a work of this kind, when, by a little extra expense at the commencement, we may find the work already done to our hands?

Many farmers in this part of the country, though depending principally for their income upon their milch cows, are not aware, it is apprehended, of the small produce derived from them; and would, no doubt, be surprised on learning that their cows generally do not yield an average daily produce of more than from two to four quarts of milk for the year.

The average price of milk for the year, when drawn from the cow, will not exceed three cents per quart, either for the purposes of manufacturing into butter or cheese, or to sell in the market. Let the farmer set off the expense of keeping against his six or twelve cents a day income from his several cows, and he will see but a small chance of acquiring wealth from the income of his dairy. But let him have a stock that, with the same keeping, will yield a daily average produce of six or eight quarts of milk, and he will find the produce of his dairy, which before gave him hardly enough to pay for the feed of his cows, now affording him a net profit, which will more than meet the extra expense which he may incur in the purchase of his improved breed of cows.

It may be said that the expense of keeping the improved breed will be greater than that of the native cows. This may or may not be the case. But the question with the farmer should not be, which will require the most food, but rather, which will give the greatest net profit on what they consume. It is the greatest capacity which the animal possesses of con-

verting her food to milk, which ought, in the estimation of the judicious farmer, to constitute her relative value.

It was with a view of introducing among our farmers a dairy stock that should, with proper care and management, remunerate, and more than remunerate, the expense of keeping, that the trustees were induced to appropriate so considerable a sum to this object.

What they have now done forms but a nucleus or starting point, from which, with the aid and countenance of a liberal public, they hope, in due time, to diffuse among the farmers of Massachusetts, not only an improved race of animals, but also an ambition to excel in every thing that relates to this important branch of rural economy.

The breeds of cattle, which the trustees believed, under all the circumstances, to be best adapted to this country, best calculated to promote the object they had in view, and to subserve the wishes and wants of the farmer, were the Ayrshire and North Devon.

The Ayrshire cows have been, for nearly or quite a century, distinguished as deep milkers, and, at the same time, are known to be a hardy, mild-tempered, and docile race, easily kept, with a disposition to fatten when not in milk, and having a capacity of converting their food to milk beyond that possessed by any other breed of cows in Great Britain.

The venerable Aiton, who may be justly styled the pioneer and champion of improved husbandry in Scotland, and particularly of that branch which relates to dairy stock, says; "The Ayrshires are the most improved breed of cattle to be found in the island, not only for the dairy, in which they have no parallel, under similar circumstances, but also in feeding for the shambles. They are, in fact, a breed of cows that have, by judicious selection, cross coupling, feeding and treatment, for a long series of years, been brought to a state of perfection, which fits them above all others yet known to answer in almost every diversity of situation where grain and grass can be raised to feed them, for the purposes of the dairy, or for fattening them for beef."

In the dairy establishment of Mr. Harley, at Glasgow, con-

sisting of 150 cows, they were principally of the Ayrshire breed, to which he gave a decided preference over any other breed. The average quantity of milk given by the cows in his establishment for the year, was eleven quarts per day from each.

In the famous dairy establishment kept by Mr. Rhodes, near London, of 400 to 600 cows, "he had tried the Ayrshires, to the number of 150 at a time, and by him they were highly approved, affording a large quantity of rich milk, fattening in a very short time, when they left off giving milk, and producing beef which was more highly valued, and sold for a higher price in the market than that of the Short Horns."

Aiton asserts that many of the Ayrshire cows, in their best condition, and well fed, will yield at the rate of 1000 gallons of milk in a year, or over ten quarts per day. Rankin, however, states his opinion that Aiton had given the daily average produce too high, and thinks that few herds of twenty cows or over will average more than eight hundred and fifty gallons, or about nine quarts per day. He also states that he had seen thirty-six quarts of milk drawn from a cow in one day, and that he had a three year old quay, that once for six weeks after calving, gave twenty-eight quarts per day. The dairymaid predicted that "there had been o'er-muckle talk about her for ony luck to come of her," and he states that she soon afterward received an injury which caused one of her quarters to become dry of milk.

The characteristic points of the Ayrshire cow, when Aiton wrote, were,—"Head small, but rather long and tapering at the muzzle; the eye small, but smart and lively; horns small, clear and crooked, and the roots at considerable distance from each other; neck long and slender, tapering toward the head, and no loose skin below; shoulders thin; fore-quarters light; hind-quarters large; back straight; broad behind; joints rather loose and open; carcass deep, and pelvis capacious and wide over the hips, with round fleshy buttocks; tail long and small; udder capacious, broad and square, stretching forward, and neither fleshy, low hung, nor coarse; the milk-veins large and prominent, teats short, and all pointing outward; skin thin and loose; hair soft and woolly."

This is an accurate description of the Ayrshire stock imported

some seven or eight years ago by the State Agricultural Society. The improved Ayrshire stock of the present day, which are descended from the famous *Swinley* stock, and of which the recent importation by the Society consists, differ in some respects from those above described by Aiton. The head is shorter, wider between the eyes and horns; thinner in the fore-quarter; the shoulders finer and more closely set; the limbs and body shorter, and the joints more closely and firmly set; the abdomen deeper and more capacious; the udder broader, the milk-veins more prominent, and the teats hanging directly down; hair longer, though more silky, and finer in the handling, and are altogether a hardier race of animals than the Ayrshires of former days.

"The color," says Robertson, "is generally a brown of many hues, from dark to yellow, intermixed and mottled in many a varied form and proportion with white; almost none are of one color. In a herd of forty or fifty, there will no two of them be alike in color; in this respect exhibiting a diversity not unlike to a bed of tulips, and of as many hues and shades, in an endless variety of beauty."

The North Devon stock has long been celebrated as a breed of cattle beautiful in the highest degree. For the dairy, they cannot be considered equal to the Ayrshire, but viewing them as uniting the three qualities of working, fattening, and milking, they may be considered as unrivalled. Some of the writers upon English stock give them a high rank as milkers, and Mr. Conyers, of Capt Hill, near Epping, a district almost exclusively devoted to the purposes of the dairy, preferred the North Devons, "on account of their large produce, whether in milk, butter, or by suckling."

"The North Devon oxen," says an English writer, "are unrivalled at the plough. They have a quickness of motion which no other breed can equal, and which very few horses exceed. They have also a docility and goodness of temper, and also a stoutness and honesty at work, to which many teams of horses cannot pretend."

Such is the character given of the breeds of cattle (a bull and four cows of each), which the Society have imported with a

view of improving the stock of the country; and in order that there should be no mistake or disappointment as to the character of the respective breeds for purity of blood, and with a view of obtaining the best animals upon the most reasonable terms, the trustees decided on sending out an agent for the purpose of making the selection. And accordingly, Mr. Alexander Bickett, of Lowell, a gentleman of intelligence, and an excellent judge of cattle, who had resided for some years in Scotland, and personally known and highly respected by most of the owners of distinguished herds of cows in and about Ayrshire, was engaged in July last, to proceed to England and make the purchase. Mr. Bickett had, within a few years past, attended some of the cattle shows in Scotland, had noticed the best stock, and knew where he could place his hand upon the best cattle in the country. The acquaintance of Mr. Bickett with the respective owners enabled him to treat with them upon terms much more favorable to the Society than could have been done by a stranger. The four Ayrshire cows and the Ayrshire bull, selected by him, are probably equal, if not superior, to any other five cattle that could be purchased in Scotland. They are all descended from the purest and best blood of the Ayrshire stock, as will be seen by the pedigree given of them.

In the selection of the North Devon stock, Mr. Bickett applied directly to the Earl of Leicester, from whose beautiful herd of North Devon cows, he hoped to be allowed to make the purchase. When it was made known to the young Earl that the stock was wanted for the Massachusetts Society for Promoting Agriculture, he generously and very readily fell in with the views of Mr. Bickett, and, possessing all the kind feelings of his father, the late venerable Earl of Leicester, toward the people of this country, he allowed Mr. B. to select from his flock, at a very moderate price, a cow and three beautiful heifers, all in calf by one of the most celebrated North Devon bulls in the country. The Earl having no bull that he could part with, he recommended a young bull of Mr. Blomfield, which Mr. Bickett succeeded, after much importunity, in purchasing.

The cattle were all shipped at Liverpool, about the first of September last, and arrived in Boston about the first of October.

They were attended on the voyage by Mr. Bickett; and with so much care and fidelity on his part, that no injury happened to them, and they were in as fine condition when landed in Boston, as when put on board the ship at Liverpool. The North Devon cow calved on the passage from Europe, and the three North Devon heifers have calved since their arrival, the four calves furnishing a fine specimen of this beautiful stock.

The appearance of the cattle on their arrival in Boston, was very gratifying to the trustees and all who saw them, and such as was highly creditable to the skill of Mr. Bickett, and to his indefatigable care and attention to them while on shipboard.

The cattle, on their arrival, were placed under the care of the subscriber, at his farm in Lexington, where the public are respectfully invited to call and view them.

Pedigree of the Imported Stock.

The following pedigree of the Ayrshire bull "Prince Albert," imported by the Society, was kindly furnished by John Moore, Esq., the highly respectable editor of the "Ayrshire and Renfrewshire Agriculturist."

"The stock from which 'Prince Albert' sprung, is traced back to a bull which came into the possession of Mr. William Wyllie, farmer in Pitcou, Dalry, which afterward became the property of Mr. Theophilus Paton, of Swinlee, in the same parish. This bull was a remarkably fine, symmetrical animal, was often shown, and was never beaten. He was the origin of the Swinlee breed, and was called 'Swinley.' This bull was the sire of

"*Young Swinley*, out of Mr. Paton's celebrated cow 'Old Dandy.' He took the Beith Society's 1st prize, and various others in the young and aged classes. His dam was the winner for several years of the Beith and Androssan Society's first prizes for aged dairy cows, and competed till faily broken down, when she was beaten by her own daughter, 'Young Dandy.' 'Young Swinley' was the sire of

"*Old Sandy*, dam a cow, Young Dandy, the property of Mr. James Allen, farmer in Blackstone, parish of Dalry, and bred by him. Old Sandy afterward became the property of

Mr. Jameson, in Kilbinnie place. He gained the Highland Society's second prize at Glasgow, in 1838, when he was two years old; the Androssan Society's first prize for three years old and aged bulls, and also the Beith Society's first prizes for five years. It was remarked by Mr. McMurtrie, Secretary to the Ayrshire Association, at the show at Maybole, in 1843, that thirteen out of eighteen bulls that had received prizes from that Society, had their origin from this bull. He was the sire of

"*Sandy*, bred by Mr. Paton, Swinlee, dam a daughter of 'Young Swinley,' also the property of Mr. Paton, and bred by him. Sandy gained the Beith Society's first prize when two years old, the Androssan Society's first prize for three years old and aged bulls, the Greenock Society's first prize, carried away a sweepstakes at Kilmarnock, gained the first prize at Dundonald, when 14 years of age, and was never beaten. Sandy was the sire of

"*Young Sandy*, bred by Mr. Paton, of Swinlee, dam a cow purchased by Mr. Paton, from John Crawford, in the farm of Birkhead, Dalry, an excellent animal, but never shown. Young Sandy gained the Beith Society's first prize when one year old, the Androssan Society's first prizes when two and four years old, and (at that time the property of Mr. Allen, in Blackstone,) the General Agricultural Association for Ayrshire's first prize at Kilmarnock, in 1836, and when five years old. He was sire of

"*Bauldy*, bred by Mr. Allen, in Blackstone, from a fine cow that never was shown. Bauldy gained the third prize at the Association's show at Ayr, in 1841, the first prize at Dundonald, in 1842, and second prize at Kilmarnock, in 1843; was purchased by Mr. Whyte, East Raws, Grougar, Kilmarnock, by whom he was afterward resold to Mr. Andrew McGregor, in Damhead, Recarton. His stock are famed as prize animals. A Mr. Howie, of Burnhouses, Grougar, has a very superior stock of young cattle from this bull, who is grandsire of 'Prince Albert,' and sire of

"*Young Bauldy*, uncle to 'Prince Albert,' bred by his Grace the Duke of Portland, at Fullerton, near Troon, Ayrshire. Young Bauldy is now the property of Mr. Andrew McGregor,

in Doonholm, and took the county prize at Dalry, in 1845. His dam was considered the best cow in the stock. Young Bauldy is full brother to 'Dainty Davie,'* sire of

"*Prince Albert*, also bred by Mr. McGregor, dam a very superior milker, with a well formed body and well set udder. She took the second prize at Kilbride show, in 1844, open to Great Britain and Ireland. Prince Albert is at this date (July 22d, 1845,) thirteen months old.

"As the merits of some members of 'Prince Albert's' family may, perhaps, be interesting, I append notices of those famed bulls, 'Geordie,' and 'Jock the Laird,' from the same Swinley breed.

"*Geordie*, brother to 'Bauldy,' and great uncle to 'Prince Albert,' was bred by Mr. Robert Logan, West Mains, Kilburnie, dam bred by Mr. William Walker, Langlands, Kilburnie. One day's milk of this cow produced thirty ounces of butter, and the trial was made when she was twelve years old. She was descended from the Swinley stock. 'Geordie' gained the Highland Society's first prize for two year olds at Glasgow; the first prize when three years old, at Dalry, in 1839; the Highland Society's first prize at Inverness, in the same year. He never was beaten, and competed every year so long as he lived.

"*Jock the Laird*, grandsire of 'Prince Albert' by the mother's side, a true specimen of the Ayrshire breed, was shown oftener than any bull in the west of Scotland; never beaten but once, by 'Geordie,' when three years old, or under. A list of his prizes I cannot lay my hands upon, but they are well known to be numerous. His stock is very superior. The first and third prizes in the two year old class, were his offspring. The first prize two year old, could have been sold for £45, but the owner refused the sum.

"The above pedigree and facts have been compiled from documents in possession of the Secretary of the General Agricultural Association, for Ayrshire, and kindly lent me by that gentleman for the purpose.

JOHN MOORE.

Editor of the Ayrshire and Renfrewshire Agricult."

* Dainty Davie was sold when eighteen months old, and sent to England: can say nothing about his stock there.

The foregoing document from Mr. Moore, was accompanied by the following letter from that gentleman to Mr. Bickett, which is given for the purpose of showing the estimation in which the stock purchased by Mr. Bickett was held by his friends in Scotland.

"*Agriculturist Office, 22d July*, 1845.

"My Dear Mr. Bickett:—I am happy to have it in my power to send an authentic pedigree of your excellent young bull. The statements of Messrs. Paton and Allen, Blackstone, the most talented genealogists in the West, have guided me.

"I regret that want of time will not allow me to speak more lengthily of the collateral branches of the family. They are all distinguished.

"All who have seen your purchases, are loud in praise of your skill and discrimination, and my humble self among the rest. I do hope the same satisfaction will be felt by your constituents.

"With my best wishes for your safe arrival at home, and your welfare when there,

I am, my dear Mr. Bickett,

Yours, verily,

JOHN MOORE.

Alexander Bickett, Esq."

The following statement of Mr. Andrew McGregor, is given by him, relating to the two Ayrshire cows, "Flora McDonald" and "Jeanie Deans":

"*Doonholm, July 16th*, 1845.

"This is to certify that I have sold to Mr. Alexander Bickett, an Ayrshire cow, Flora McDonald. She is of a dark brown or red color, on hind quarters and neck; her belly is white, and there is also some white on her fore quarters. She has a white spot in her face. She was bred by me. Her dam was a very excellent dairy cow. She was sired by my bull 'Royal George,' that took the first prize at Kilmarnock for two year old bulls. His dam 'Beauty,' took the first prize for the best cow, at Kil-

marnock, in 1840, and the second prize for the best cow in 1841, and she was one of five that got the first prize for the best five cows at the Kilmarnock Cattle Show, in 1842. I sold her when twenty years old. Her constitution and frame were as good as ever at that age. She was sixteen years old when first shown in 1840. She had a bull calf when she was twenty years old, which took the first prize for one year old bulls, at Dondonald Cattle Show, in 1845.

"I consider Flora McDonald a good milker and breeder. She was one of three that took the first prize at the Ayrshire Agricultural Association's Show held at Kilmarnock, in 1842, for the best three cows, and she was also one of three that got the first prize for the best three cows at the Ayrshire Agricultural Association's Show at Dalry, in 1845. She was served about the 7th of July, by 'Young Bauldy,' who took the Ayrshire Association's first prize at Dalry, in 1845, for aged bulls.

ANDREW McGREGOR."

"I do also certify, that at the time and place stated above, I sold to Mr. Bickett an Ayrshire cow, Jeanie Deans. She was one of three that took the first prize for the best three-year old cows, shown at the Androssan Agricultural Association's Cattle Show, held at Dalry, in 1843. She also took the first prize at the Symington, Dondoland, and Kilmarnock Cattle Shows, held in 1843, for the best three year old cow. Her dairy qualities are excellent, and she breeds well. I am serving my cows this year with a son of hers.

ANDREW McGREGOR."

The following is a copy of an opinion given by Mr. McGregor to Mr. Bickett, relating to the bull "Prince Albert":

"Mr. Bickett wished me to give my opinion of 'Prince Albert,' that was bred by me, but at present the property of Mr. Kirkwood. This I can do with pleasure, as I consider him to be one of the best bred bulls in Ayrshire, a fine animal of his age, and of great promise.

ANDREW McGREGOR."

The following is a copy of the statement made relative to the Ayrshire cow "Mirley," by Mr. John Young, of whom she was purchased:

"*Kilmaurs, Mains, July* 19, 1845.

"Sold Mr. Alexander Bickett an Ayrshire cow, Mirley. She is spotted or speckled, of a red and white color, with a white forehead. She is an excellent milker, and has given twenty-nine lbs. of milk at one milking. I would not have sold her if it had not been to favor my friend, Mr. Bickett, and it is only because I have two more of the same family, that I would sell her for any price, as I do not wish to run out of the breed, for they are all deep [milkers], and their bodies and udders are generally well formed.

"Mirley was one of three cows which got the first prize for the best three cows shown at the Ayrshire Cattle Show, held at Kilmarnock, in 1842. She got the third prize at the Androssan Society's Show, held at Irvine, in 1844, but she would have taken the first prize if she had been calved, as the preference is given by that Society to a cow in milk, even if she is inferior to one that is 'back in the calving.' The first prize was given to a cow of the same stock.

"She got the first prize for best cow at the Dundonald Cattle Show in 1844. (She was then calved). She was also one of two which took the first prize at Kilbride, in Renfrewshire, for the best pair of cows. Kilbride is open to all Britain and Ireland. Her pedigree on the mother's side is as follows; Grand dam bred by Mr. Gray of Munfield, near Kilmaurs. I bought her in 1825, when two years old, and kept her over fourteen years, and sold her to go into a Glasgow dairy. She was an excellent milker, and her milk was of a good quality. Her body and udder were well formed.

"Dam bred by me. She was sired by 'Bruce,' who got first sweepstake prizes for aged bulls at Dundonald, and a second prize for aged bulls at Cragie; her dairy qualities were very superior. Mirley was sired by Waterloo, who got the second prize for aged bulls at Grougar, in 1842. He served my cows seven years.

"Waterloo was sired by 'Bruce.' Bruce, by Wellington. Wellington was sired by Sandy senior, who was bred by Mr. Paton, of Swinlees, who was never beaten. He got a first prize at Dundonald, when 14 years old.

JOHN YOUNG."

Mr. Young further states, "that Mirley was served on the 25th July, 1845, with my three year old bull 'Charley.' He got the second prize for one year old bulls at the County Society's show, held at Maybole, in 1843, and his brother got the first prize at the same time and place, and his sire got the second prize at Grougar Cattle Show, in 1844. Charley's dam got the third prize for three year olds, at the County show held at Dalry, in 1839; and she and her offspring took the second prize at Kilbride, in 1845, for the best cow and her breed. Kilbride is open to Great Britain. She gave 29¼ pounds of milk at one milking. She was milked clean twelve hours previous. The trial was not intended, but was done at Mr. Bickett's request, when he called in the morning unexpectedly.

JOHN YOUNG."

The following certificate was given by Mr. John Hamilton, relating to the Ayrshire cow "Charlotte:"

"*Capringstone, Aug.* 18, 1845.

"This is to certify that I have sold to Mr. Bickett a white and red-brown cow, *Charlotte*, bred by me. Her mother gained a second prize in the Androssan Farmer's Society, when three years old. Her sire was got by Mr. Eaton's celebrated bull, *Swinlees*, who gained more first prizes than any other bull that ever appeared in this quarter of Scotland. This cow was never shown at any competition. We are in the habit here of selling milk, and have our cows always early calved, and never had her in proper *rig* for showing. She is a very quiet tempered cow, and an excellent milker. Nothing but a good price would induce me to part with her. I hope she will please. She has been declared by good judges, to be the best cow in this district.

JOHN HAMILTON."

The following is the pedigree of the North Devon bull, now nine months old, as given by John Blomfield, Esq., by whom he was bred :

"*Warham, Aug.* 6, 1845.

"Pedigree of the North Devon bull sold to Mr. Bickett :— Got by 'Quartly', dam, from the late Lord Talbot's celebrated herd. 'Quartly' was bred by Mr. James Quartly, South Molland, Devonshire, by his bull 'Silliphant.' Silliphant won the first prize at Exeter Agricultural Show, beating all the best bulls in the south of England. He was sold for 100 guineas. The late J. W. Coke, Earl of Leicester, of Holkam, Norfolk, told me that Quartly's North Devon stock were celebrated during the time of the late Francis, Duke of Bedford, and I consider this young bull to be as good blood as any in England.

Signed, JOHN BLOMFIELD."

The following is a letter from Mr. Keary, the agent of the Earl of Leicester, relating to the cows and heifers of the North Devon breed, to Mr. Bickett :

"*Holkham, 4th Aug.* 1845.

"To MR. A. BICKETT—

"SIR,—I beg to hand you the pedigree of the cows and heifers you have purchased from the Earl of Leicester's herd of pure North Devons. They are all in calf, I believe, to 'Derby,' a bull we value very highly. He obtained the prize at the Royal Agricultural Society's meeting at Derby, in 1843, and his sire gained the prize at the same society's meeting at Bristol, in 1842, and was moreover considered by the best judges to be one of the most complete Devon bulls ever exhibited.

"I hope the cows will arrive safely in America, for I feel sure they are animals whose symmetry and quality will give satisfaction to your employers.

"PEDIGREE.

"'*Cypris*,' by Spencer, dam by Denny, g. dam by Sampson, and served by Derby, in January, 1845.

"'*Honeymoon*,' by Quartly, dam by Denny, g. dam by Sampson, served by Derby, April, 1845.

"'*Stella*,' by Quartly, dam by Denny, g. dam by Sentinel, put to the bull Derby, in January, 1845.

"'*Jasper*,' by Quartly, dam by Denny, g. dam by Sentinel, put to the bull Derby, in January, 1845.

I remain, sir, yours, very obediently,

Signed, H. W. KEARY."